

Lodi

Area Fire/EMS Station

Study

City of Lodi and Townships
of Lodi and West Point

August 2019



Public Administration Associates, LLC

Kevin.brunner1013@gmail.com
1155 W. South Street
Whitewater WI 53190
Phone: 262-903-9509

Table of Contents

Executive Summary.....	1
Introduction	2
Description of Fire District and EMS Service Area.....	3
Population Projections and Future Demands for Service.....	5
Industry Standards and Best Practices by which to Evaluate Services....	7
Review of Current Response Times and Service.....	10
Review of Current Fire and EMS Facilities.....	13
Facility Options and Cost Estimates.....	26
Location Options.....	33
Recommendations.....	35
Appendix A Maps of Current and Proposed Stations.....	38
Appendix B Fire Apparatus Mini Pumper Photo.....	46

Executive Summary

The Lodi Area Fire and EMS departments, primarily the fire department, have been expressing their concerns about facility and space conditions for several years. This study was conducted to evaluate the current station facilities from a condition, space, and location perspective in meeting current and future service delivery needs.

The study concludes that a new fire station is needed, primarily due to lack of sufficient space in almost all areas evaluated. In addition, the current building has several pressing maintenance needs that will require significant costs in the next several years and will not provide any improvements to space and operational safety and efficiency. While the current fire station location is ideally located for the City of Lodi, it is not ideally located for the Fire District as a whole, nor does the current location or vicinity of the current station have sufficient available property for any expansion or relocation. The study also concludes that the EMS station meets current and future demands for service and that it is unnecessary to construct a new station or to combine the two departments into one building at this time.

The recommended location for a new fire station is in the vicinity of State Highway 113 and County Trunk V to provide improved coverage to the district as a whole and provide sufficient space to construct a new fire station facility without compromise. Station location and response time/distance study also indicated the need for a small satellite station in the unincorporated area of Harmony Grove to improve response time and potentially improve the Insurance Service Office (ISO) rating of this area by maximizing the value of the municipal water system that serves this area.

Introduction

The Lodi Area EMS and the Lodi Area Fire Department (District) and Police Department solicited proposals to conduct a comprehensive review of the long-term facility needs and possible new site locations for Fire and EMS Stations and well as the possibility of a joint Fire/EMS Police Station.

A joint committee was formed involving members of the District Boards, Community Officials, and members of the respective departments. The charge of this committee was to develop a request for proposals and select a consultant to provide these services.

The final step in the selection process was a presentation in which Public Administration Associates, LLC (PAA) outlined its approach to this study and the services it would provide for this study. It should be noted that from the time of the original Request for Proposals, the scope of the project was reduced to Fire and EMS only. PAA narrowed its scope of recommended services it would provide to the following elements.

This study is organized into the following sections:

1. Description of the Fire District and the Local Area EMS geographic area and participating units of government.
2. Population projections and future demands for services.
3. Industry standards and best practices by which to evaluate current and future service provision.
4. Review of current Fire and EMS response times and services.
5. Review of current Fire and EMS facilities.
6. Review of location options for facilities.
7. Recommendations of the Study.

Description of the Fire District and EMS Service Area

City of Lodi

The City of Lodi is located in southwestern Columbia County, just southeast of the Wisconsin River. The City was first settled in the mid-1840s, and its proximity to the river became an important asset. Lodi was officially incorporated as a village in 1872. In 1941, Lodi was reincorporated as a city and has since seen substantial population growth. Between 1990 and 2000, Columbia County's population grew by 7,380 or 16 percent. This growth rate exceeded both the state and national rates and surpassed that of many other Wisconsin counties. The City of Lodi grew by 38 percent, or 789 people from 1990-2000. During this period, however, there was a single year increase that skews these data when a housing development was added in 2000 that increased the population by 247 or 9.5% in that single year. The annual population increases from 1980 to 2000 ranged from 0.08 percent to 4.4 percent.

Town of Lodi

The Town of Lodi is located in the southwest corner of Columbia County, Wisconsin. It is surrounded by the Towns of Caledonia, Dekorra, Arlington and West Point in Columbia County and the Town of Dane in Dane County. Most of the area in the Town are rolling hills of undeveloped agricultural and forest land with scattered rural residences, some development clusters, and some urban areas adjacent to the City of Lodi. Within the Town of Lodi are the unincorporated communities of Harmony Grove and Okee. Both are served by a Sanitary district. The substantially developed community of Harmony Grove also is served by a municipal water system. These two unincorporated areas along the shores of Lake Wisconsin in the Town's northwest corner are home to the majority of its population.

Starting in the decade between 1930 and 1940, the Town began a period of population growth that continues through to the present. The period of the highest percentage growth occurred between 1960 and 1970, reaching an increase of 52.47 percent. The Town's population grew steadily between 1930 and 2000 with five of seven decades having a growth rate over 18 percent.

Town of West Point

The Town of West Point is located in the southwestern corner of Columbia County, Wisconsin. The Town is adjacent to the Town of Roxbury in Dane County, the Towns of Merrimac and Prairie Du Sac in Sauk County, and the Town of Lodi in Columbia County. The Town of West Point has the distinction of being bordered by Lake Wisconsin on the entire west and north sides. A ferry has been in operation since 1844 and traverses the Wisconsin River between the Town of West Point and Town of Merrimac in Sauk County. The free ferry has been a major tourist attraction for the Town of West Point

and is the only municipally owned and cable operated ferry in the United States. It carries approximately 17 cars at one time.

Beginning in the late 1850's, over 100 dairy farms were developed in the valleys of the rolling terrain in the Town of West Point. In the 1860's potatoes and wheat were important crops. Stock farming was diversified and included cattle, sheep, swine and chickens. When the dam was built in 1914, the population of the Town of West Point was 949. The dam created Lake Wisconsin the new lake frontage brought an influx of summer people building cottages. Since that time, housing development has continued, especially along the lakeshore.

Lodi Area Fire Department

The Lodi Area Fire Department is a municipal based fire department providing service to the City of Lodi, the Town of Lodi, and the Town of West Point. The service is governed by the Lodi Area Fire Commission consisting of five members, two each from the City and the Town of Lodi and one from the Town of West Point. The Department is based out of one station, and operates two engine companies, two tender companies (water tankers), one squad company, one grass/brush fire vehicle, and an all-terrain vehicle (UTV). These vehicles are staffed by a paid-on-call force of a maximum authorized roster of 40 members which varies between 35-40 actual members. Ten of the current members reside in the community of Harmony Grove. The location of the district is shown on Map 1 located on Appendix A.

Lodi Area Emergency Medical Services

Lodi Area Emergency Medical Services (EMS) is a municipal based service that has been providing emergency ambulance service to the City of Lodi and Towns of Lodi and West Point since 1970. The service is governed by the Lodi Area EMS Commission consisting of five members, two each from the City and Town of Lodi and one from the Town of West Point. It currently provides EMS response and transport service at the EMT-Advanced level. EMT Advanced certification requires 170 hours additional training than an EMT-Basic certification. EMT Advanced Technicians are trained to provide advanced patient assessment, intravenous fluid administration (IV), medications to treat cardiac and diabetic patients and 12-lead EKG to identify heart attacks. A paramedic receives 1,000 hours of additional training than an EMT-Basic.

The service has two ambulances, operating out of one station at 715 N. Main Street in the City of Lodi, which was built in 1995. Prior to then, the service was located across the street from the current fire station. The service employs five full time and 18 part time staff. One ambulance is staffed with two personnel at the station Monday through Friday from 6:00 am to 6:00 pm. Night and weekends are staffed with one person in the station and one on call staff member. It should be noted that on call staff members have the option of staying in the station and they often do stay there.

Population Projections and Future Demands for Service

Population growth in the district is projected in the following table based on projections and data from the Wisconsin Department of Administration.

Table 1: Population 2018-2040

Municipality	2018 Population	2020 Projection	2025 Projection	2030 Projection	2035 Projection	2040 Projection	Total Projected Increase
Town of Lodi	3,323	3,690	3,985	4,245	4,400	4,485	1,162
Town of West Point	2,010	2,225	2,405	2,570	2,665	2,725	715
City of Lodi	3,092	3,335	3,535	3,710	3,790	3,805	713
Total	8,425	9,250	9,925	10,525	10,855	11,015	2,590

Actual growth verses percentage growth over the next twenty years is a primary factor for forecasting future demand. The primary concern of growth for the purposes of this study is impact on emergency service demand. Service demand increases would then in turn potentially impact facility needs. The facility needs would include need to be for more apparatus space and/or need for housing personnel if there were to be a transition from all volunteer to all career staffing or some staffing mixture in between.

Fire

Annual calls for service for the fire department have grown at an average rate of 11% over the past 15 years or an average increase of ten calls per year. With this rate of increase, call volume could increase by over 50 % during the next 25 years from its current level of approximately 100 calls per year. Following this trend, annual calls for service may reach 162 by 2040; however, this is still within the range of demand for mostly volunteer departments.

A future trend that also needs to be considered is not just demand for service, but the supply of volunteers to meet this demand. As the communities grow, what are the trends for apparatus needs and/or staffing of the department? To project these needs, the annual survey of fire departments conducted by the National Fire Protection Association (NFPA) was used for comparison data.

Comparing the projected data to information from the 2017 NFPA national fire department survey on percentage of departments (see table 2), it is reasonable to project that over the next twenty years, the department is likely to evolve into a mostly volunteer department with some career staff. This should be a consideration when projecting future facility needs. In looking at numbers of apparatus and comparing

to other departments of similar populations now and at the future projections, there should be no significant need for additional apparatus space. The department has two engines which fits that the majority of departments possess in both current and future population ranges. While Lodi is on the higher end for other fire suppression vehicles, this is primarily due to the need for the water tenders to protect the rural areas without hydrants.

Table 2: Type of Department Based on Population

Population	All Career	Mostly Career	Mostly Volunteer	All Volunteer
10,000-24,999	22%	30%	33%	15%
5,000-9,999	9%	10%	40%	41%

Pumpers per Department

Population	1	2	3-4	5 or More
10,000-24,999	23%	47%	10%	1%
5,000-9,999	45%	36%	4%	1%

Other Fire Suppression Vehicles

Population	0	1	2	3-4	5 or More
10,000-24,999	24%	23%	20%	10%	12%
5,000-9,999	23%	23%	25%	10%	10%

EMS

The EMS service has already transitioned to a career paid-on-call combination department and has a facility designed for that purpose. The service has two ambulances, one of which is primarily staffed. The second is a backup for second calls and as a backup for the primary vehicle. While the need to transition to more career staffing verses paid-on-call and paid-on-premise is most likely over the next twenty years, a facility change maintaining the current facilities’ staffing capacity should be adequate. This will primarily be a result of less availability of paid-on-call and paid-on premise staff verses increase in demand. If demand were to increase directly with population growth, an increase in call volume of 30% minimum should be expected. This would likely put the call volume between 900 to 1000 calls per year. This range still should be within the capacity of one primary ambulance based on the rules of unit hour utilization. A single ambulance with an average time on calls of two hours (time of call to return into the district) would have a unit hour utilization of 0.20. A unit hour utilization rate of 0.16-0.24 indicates the “Ideal Commitment Range.” Personnel are able to maintain training requirements and physical fitness and can consistently achieve response time benchmarks. Units are available to the community more than 75 percent of the day. Units below 0.16 should be evaluated for more efficient use as additional operating capacity is available.

Industry Standards and Best Practices by which to Evaluate Services

Fire

The Insurance Service Office (ISO) an independent agency that evaluates the major elements of a community's fire prevention and suppression systems and rates them on a scale of one to ten with one being the best rating possible and 10 representing less than minimum recognized protection. These ratings are one of the elements used to develop the property insurance cost. Currently all of the fire departments with the exception of Townsend (Class7) are rated as Class 9. This rating would apply to properties within five road miles of the respective fire stations. Properties beyond five road miles are typically assigned a Class 10 rating.

The general areas that are evaluated by ISO are; (1) Emergency Communications, (2) Fire Department Operational Considerations (Standard Operating Procedures), (3) Water Supply, and (4) Community Risk Reduction (Fire Prevention). Each of these areas are broken down into more specific sub areas. For example, the Fire Department is broken down into fire apparatus, training, staffing, personnel and training.

There are key elements the fire department needs to provide to receive a class nine ISO rating or better. The department must respond with four or more personnel on initial alarms. The apparatus they respond with must have a pumping capacity of 750gpm or greater. The first due fire apparatus must be within five road miles of the rated property. For properties within five miles of the initial fire apparatus response, but greater than 1,000 feet from a water supply, the fire department must be able to establish a water flow of 250 gallons per minute (gpm). This water flow must be maintained and uninterrupted for 2 hours. An uninterrupted flow maintained greater than 250 GPM could result in a better classification. It is important to note that, staffing, apparatus, road miles and water supply do not stand alone and are considered with the other elements of the schedule. A greater indicator of response time performance is to collect and analyze data in a "fractile" format. For example, NFPA 1720 recommends a response time of 14 minutes 80% of the time for rural areas. This would be an example of fractile response. A "fractile" format presents a better representation of performance of service provided rather than utilizing an average. NFPA 1720 also recommends a minimum response of ten personnel in suburban areas and six in rural areas.

EMS

Currently the only benchmarks that are published for EMS response is through NFPA 1710 and 1720, the Standard for the Organization and Deployment of Fire Suppression, Emergency Medical Operations, and Special Operations to the Public. NFPA 1710 applies to "substantially career" and NFPA 1720 applies to "substantially volunteer" departments. The response time for rural areas would be defined for volunteer departments as 14 minutes. The rural response time is not broken down into floor time and apparatus response time as is NFPA 1710. Since Lodi EMS has full-time people during daytime hours, Monday through Friday, NFPA 1710 should be applied at minimum for the turnout time. NFPA 1720

should be utilized for any second call during daytime hours and calls at night since the staffing for these calls have a 50% paid on call component. The American Heart Association states that irreversible brain death occurs 4-6 minutes after a person has been in cardiac arrest prior to any lifesaving maneuvers have been made. The survival of a person in cardiac arrest is reduced 7%-10% every minute. Few people are successfully resuscitated greater than ten minutes of being in cardiac arrest without lifesaving maneuvers.

Table 3: NFPA 1720

Demand Zone	Demographics	Minimum Staff to Respond	Response Time (minutes)	Meets Objective (%)
Urban area	>1000 people/mi ²	15	9	90
Suburban area	500–1000 people/mi ²	10	10	80
Rural area	<500 people/mi ²	6	14	80
Remote area	Travel distance ≥ 8 mi	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

Relevant Codes and Standards

Standard federal and state building codes apply, as appropriate. There are also numerous codes and standards that apply to the staffing and operation of a fire/rescue department; key standards include the following:

AC 150/5210–15A Aircraft Rescue and Firefighting Station Building Design, Federal Aviation Administration (FAA)

Fire Suppression Rating Schedule (FSRS), ISO Mitigation (Insurance Services Office)

NFPA 403: Standard for Aircraft Rescue and Fire Fighting Services at Airports, National Fire Protection Association

NFPA 1500: Standard on Fire Department Occupational Safety and Health Program, National Fire Protection Association

NFPA 1581: Standard on Fire Department Infection Control Program, National Fire Protection Association

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, National Fire Protection Association

NFPA 1720: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments, National Fire Protection Association

Wisconsin Commercial Building Code SPS 361-366 and International Building Code (IBC), 2015 edition.

Review of Current Response Times and Services

Fire

The Lodi area fire station is currently located at 115 N Main St in the City of Lodi. (See Map 3.) The response time data provided for fire incidents was limited to the years 2015 through 2017 due to a transition of records management software. The data provided did not break the travel time down by incident, but was listed as alarm date and time of incident and arrival on scene. The data was benchmarked according to the NFPA standard 1720 for suburban departments at 10 minutes and rural departments at 14 minutes. In reviewing this data compared to the benchmarks, the department's response times are very good. With the inclusion of turnout time, which is the time of receiving the call until the time a vehicle goes en-route to the scene of the emergency, these times are within reasonable ranges overall and meet the response time goals for rural areas according to NFPA 1720. See Map 3 Appendix A

Table 4: Fire Response Times

Response Time	Percentage of Incidents Responded			Average
	2015	2016	2017	
< 9 minutes	68%	67%	79%	71.33%
< 10 minutes	72%	74%	82%	76.00%
< 14 minutes	88%	94%	94%	92.00%

Station location is also a matter of concern from the perspective of the ISO rating; however, rather than viewing it from a response time perspective, distance is used as the performance benchmark. To maintain the ISO 4 rating or better for the City of Lodi, a fire station needs to be located within 1.5 miles of the area served by the municipal water system. To receive minimal credit under ISO for areas outside of a municipal water system, the area should be within 5 miles of a fire station. Modeling the current location with GIS has been done at the 1.5 mile and 5 mile benchmarks. The mapping model shows that the 1.5 mile benchmark is met from the current location; however, there are areas in the district that are outside of the five mile distance from the fire station. (See Map 4.)

Because the City of Lodi is on the southern border of the district, response distances to the northern area of the district are definitely affected by this location. Distance is not the only impacting factor on station location and should not be the only consideration for locating a station. Development and population density along with historical demand also are factors that must be considered. Since the City of Lodi is the most densely developed area and therefore also has the highest concentration of demand, weighting

the station location to the City of Lodi along with maximizing the ISO credit for response within the area served by the water system is an overriding factor.

In our review of the mapping models, an area of concern was identified is the area of Harmony Grove in the Town of Lodi. The Harmony Grove area is more suburban in density than the rural density of the rest of the Town of Lodi. This area is served by a municipal water system, but it is beyond the five mile range from the fire station and thus it receives no minimum credit in the ISO rating.

EMS

Lodi EMS is currently located at 715 N. Main St. in the City of Lodi. An evaluation of response times over the past five years demonstrate that response time from this location meet or exceed expectations. (See Map 2.) The focus of this study was travel distance/response times or the time a vehicle went enroute to time of arrival on the scene of an incident. This time does not include the other components of total response time which include 911 call processing time and turnout time which is the time of receiving the call until the time a vehicle goes enroute to the scene of the emergency. With on average 64% of calls originating in the City of Lodi and the response time falling within the less than 6 minute range, 72%, the data and a review of calls indicates the City is enjoying a less than 6 minute response time for greater than 90% of the time, which is outstanding from any benchmarking perspective. National studies showed an average, or mean, response time of 7 minutes in urban and suburban areas, it should be noted that a mean response time indicates the average response time. Comparing response times in the city of Lodi to this study it would indicate that from this perspective, the entire City of Lodi receives a better response time than half the general population of the rest of the country. In comparison for rural response times, studies show that rural response times average 14 minutes, again an average that half were less, half greater. Lodi Ems is providing a Response time to all areas including rural areas in under 12 minutes 96% of the time, according to the data provided.

Table 5: EMS Response Times

Response Time	Percentage of Calls Responded					Average
	2014	2015	2016	2017	2018	
< 6 minutes	77.40%	79%	75%	69%	62%	72.48%
< 10 minutes	0.957	94%	96%	90%	96%	94.32%
< 12 minutes	98%	97%	98%	93%	99%	96.86%

We also reviewed the current location from a computer modeling perspective utilizing GIS (Geographic Information System) with mapping data from Columbia County. The computer software utilized for this and the fire station location modeling is Esri Arc/GIS. The computer modeling utilizing GIS also requires a response time formula. To develop this formula, the RAND Corporation conducted extensive studies of fire department response times. It concluded that the average speed for a fire apparatus

responding with emergency lights and siren is 35 mph. That speed considers average terrain, average traffic, weather, and slowing down for intersections.

Taking into account the average speed and the time required for an apparatus to accelerate from a stop to the travel speed, RAND developed the following equation for calculating the travel time:

$$T = 0.65 + 1.7D$$

Where

T = time in minutes to the nearest 1/10 of a minute

0.65 = a vehicle-acceleration constant for the first 0.5 mile traveled

1.7 = a vehicle-speed constant validated for response distances ranging from 0.5 miles to 8.0 miles.

D = distance

Based on comparing the times of Lodi EMS to national standards, comparative data and computer modeling, there is no indication from a response time perspective that a different location is warranted.

Review of Current Fire and EMS Facilities

Fire Facilities

1. Apparatus Room

- a. Number type of Apparatus: The Department currently has two engines one Heavy Rescue/Squad Apparatus, two Water Tenders, one Brush/Grass Fire Apparatus, One UTV and stores one Antique Fire Apparatus.
- b. Condition: The physical condition of the building on this area is fair. When taking measurements for ceiling heights, it was discovered that steel I beams supporting the roof had been cut through to allow the placement of garage door openers closer to the ceiling for clearance of the fire apparatus. It was unknown if this alteration had been reviewed by a structural engineer to ensure that the structural stability had not been compromised.
- c. Space Utilization: Ceiling heights do not allow for the apparatus cabs to be tilted for maintenance checks on the vehicles or to allow room for hose loading in the main beds of the engines while inside the building. There is inadequate distance between vehicles to allow personnel to pass by and/or carry out maintenance with the compartment doors open on adjacent apparatus. Overhead door width of 12 feet is minimal for an 8.5 foot wide vehicle not including side mirrors. Distance from front door to overhead doors is approximately two feet which is below standard for an egress/access aisle. The apparatus bays are separated by a hallway and office area and the rear areas have less space between vehicles. This arrangement is not efficient for accessing equipment for maintenance or servicing of the vehicles. The size restrictions of the building do not allow for mutual aid fire apparatus to stand by in the station as they cannot fit in the station. This is an issue particularly in cold weather months to protect the apparatus from freezing. This space/size issue is also a consideration on future apparatus purchases as vehicles must be custom designed to fit into the station, thus creating some limitations on what apparatus can be purchased.
- d. Vehicle Exhaust System: The apparatus bay is equipped with a vehicle exhaust capture system which is an important safety item.

2. Personal Protective Gear:

- a. Storage: Personal protective equipment is stored against the walls in the apparatus bay. The lack of space between the walls/lockers and the apparatus make a very cramped area for firefighters to don their gear when arriving at the station or for later arriving personnel to pass by in the aisle way. Personal protective gear should be stored in a separate room and protected from UV light which contributes to the premature breakdown of the material. This room also should be directly accessible from the outside of the building/ firefighter emergency parking area to reduce turnout time from the station. The storage

area also needs to include adequate space and aisle way for firefighters to “dress out” and other firefighters to pass by with the staggered response times of personnel to the station.

- b. **Decon: Washer/Drying area:** There is no defined area for decontaminating/cleaning personal protective equipment after fires. The department does have a commercial washer/extractor, but it is located behind one of the tender apparatus with little room to work around it and no space for air drying gear. Gear must be brought through the hallway (that accesses offices and the training room) to reach this area from the front apparatus bay. A separate room with direct access to the fire apparatus should be provided for firefighter safety in order to clean and decontaminate personal protective equipment and fire equipment. The reason for this arrangement is to prevent the contamination of toxic chemicals and carcinogens from cross contaminating other areas of the building, putting personnel at risk.

3. **Vehicle Equipment Maintenance Area(s):** There is no vehicle and equipment maintenance area. Vehicle and equipment maintenance supplies are kept in the limited space available on the apparatus floor, contributing to an already limited access space around the vehicles. There is no workbench area to service and maintain small equipment. Radios and other battery-operated equipment or recharged and maintained in the hallway between apparatus bays near the entrance to the station.
4. **Apparatus/Cleaning Storage:** There is no vehicle or janitorial storage room/janitors’ closet for the apparatus room.
5. **Breathing Air/Oxygen Filling and Storage:** The breathing air compressor, storage cylinders and filling station are located on the apparatus floor. This should be in a separate room for safety and health reasons and include space for servicing self-contained breathing apparatus and have storage for spare filled cylinders.
6. **General Storage:** There is no storage for spare equipment or supplies such as firefighting foam and extinguishers, spare tools etc.
7. **Office Space:**
 - a. **Administration:** There is one general office area for the department. There is no separate area for the fire chief which is a concern for privacy of records and efficiency of the operation. Separate offices should be provided for the Fire Chief, officers, and fire prevention activities and a shared conference room to allow private meetings for small groups when needed
 - b. **Officers:** See comments above.
 - c. **Storage and Support Area:** There is no storage or support area for the offices for storage of office supplies and room for a shredding copier/printer.
8. **Training Facilities/ Community Space:** The classroom training space has a maximum capacity of 53 persons based on occupancy limits of 20 sq. feet per person. This is with the room arranged

fully with tables and chairs. Any training and open area for demonstration /practices that is required would need to be taken out of this available space. The classroom also lacks modern video/computer access capabilities.

- a. **Training Office/Storage:** There is a storage area for the classroom area, but there is no office space for the training officer(s).

9. Living Quarters:

- a. **Locker Room/Showers/Restrooms:** There is no personal locker space or lockers in the station. The only shower is in the single stall men's restroom and it doubles as a mop sink /janitorial closet. Personal lockers and showers for personnel should be provided so that firefighters can shower and change their clothing at the station before returning home. This is the latest safety and health practice for removing toxins off of firefighters' bodies and to prevent cross contamination with personal vehicles and homes by bringing contaminated clothing home. Personal clothing should then be laundered in the decontamination area of the station.
 - b. **Day Room:** There is no dayroom/lounge area in the station. When personnel are standing by at the station such as the recent flooding incident in the City, there is no comfortable area for staff to stand-by. This is also the case for personnel that may stand by at the station from other fire departments when called in to cover the station under mutual-aid (MABAS) during major incidents. While this may appear to be a "luxury item" it is a recruitment retention issue making the station more attractive and comfortable to stand by in. Conversely the lack of such an area can be a deterrent for stand by and mutual aid personnel willingness to respond. A day room would also provide facilities that would allow for daytime staffing if needed in the future.
 - c. **Kitchen/Dining:** The station has a kitchen area adjacent to the training room, but is not adequately sized to serve an assembly-sized group. A larger kitchen/food prep area with a buffet serving window to the training room would make this place more efficient and functional.
 - d. **Sleeping Quarters:** The department does not have staff manning the station 24 h hours per day; however, adding bedroom facilities would allow for the station to be staffed on a 24 hour basis such as with the recent flooding incidents or other periods of inclement weather or expected high demand for service. Sleeping quarters for four personnel would allow for the adequate staffing of one engine company.
- 10. Janitorial Closet:** There is no janitorial closet for the general station area. The men's restroom shower area serves this purpose. The use of the shower for mop sink purposes is unsanitary and there is inadequate storage for supplies and equipment for maintain the station.
- 11. Station Storage:** There is no general storage area in the station.

- 12. Security/Building Access:** The station is secured with combination locks for access. Utilizing an electronic locking/fob system would speed up building access and provide a log of personnel entering the building for additional security.
- 13. HVAC Issues:** No significant HVAC issues were reported and the Chief states the furnace was “a few” years old.
- 14. Electrical Issues:** It is reported that the electrical system experiences continuous problems and circuit breakers tripping are very common. Electrical service and wiring are original and has not been significantly upgraded or improved.
 - a. Emergency Power:** The station is equipped with a natural gas supplied emergency generator that is 15 years old, which should have ten plus years of service life.
- 15. Plumbing Issues:** In addition to the lack restroom and locker facilities for personnel and the public, the plumbing system is beginning to fail. The inadequate floor drains in the apparatus bay are prone to clogging. Being built on a slab, replacing sewer drains and supply lines below the slab would require major floor removal.
- 16. Handicap Accessibility:** The station lacks accessible restroom and due to storage in hall aisle ways limited access to the station training area.
- 17. Flexibility/Expansion Potential:** The parking lot adjacent to the station is the only area open for expansion. The station is bordered by streets on two sides and the other side immediately abuts an auto service shop. The parking lot area has a maximum usable space of 80 feet by 100 feet or 8,000 square feet.
- 18. Parking:** Parking space is immediately adjacent to the station or on the street. Parking has marked spaces, which is minimal for responding personnel and below adequate for meeting/training times. There is no direct access to the station from the parking area without crossing in front of the apparatus bay doors, which is a safety concern.
- 19. Architectural Character:** The building has no significant historical building characteristics and utilitarian in exterior design. The exterior consists of brick and steel siding. The size and placement of the building on the lot does not allow for any landscaping features.
- 20. General Comments:** The roof of the entire structure is a membrane/rubber roof over 25 years old. It is failing. It already has been patched numerous times and there are issues with ice falling off the radio tower causing punctures to the roof. The approach area from the station apparatus bay doors to the side walk is a maximum of 24 feet to the sidewalk. This does not allow apparatus to turn around for backing into the station without entering the roadway in addition to having to enter the roadway before fully clearing the bay doorways, both of which are safety issues. Although noted in the section on the apparatus area, it is worth noting this concern again as apparatus storage is the primary use of the building. The size restrictions of the building do

not allow for mutual aid fire apparatus to stand by in the station as they cannot fit in the station. This is an issue particularly in cold weather months to protect the apparatus from freezing. This space/size issue is also a consideration on future apparatus purchases as vehicles must be custom designed to fit into the station and this creates limitations on what apparatus can be purchased.

Table 6: Current Actual and Recommended Space Comparison: Fire

Room/Component	Reccomened Square Footage	Actual Square Footage	Adequacy/ Deficiency
Apparatus Bay			
Engines 2	1872	1197	-675
Tenders 2	1872	910	-962
Rescue/Squad 1	936	598.5	-337.5
Brush 1	384	405	21
Utility 1	384	776	392
Antique Vehicle Storage	224	224	0
Total Apparatus Bay	5672	4110.5	-1561.5
Apparatus Support			
Maint. / Repair	200	0	-200
Cleaning/ Janitorial	100	0	-100
Storage Room	400	0	-400
Total Apparatus Support	700	0	-700
Protective Equipment			
Storage Room	500	0	-500
Decon Area Luandry	300	0	-300
Breathing Air/Oxygen Storage and Filling	200	0	-200
Total Protective Equipment	1000	0	-1000
Administration Office Space			
Chiefs Office	120	130	10
Conference Room	120	0	-120
Officers Office	240	130	-110
Storage Room	80	0	-80
Fire Inspection Office	120	0	-120
Total Administration	680	260	-420
Training			
Training/Classroom	1120	1068	-52
Office	120	0	-120
Storage Room	80	56	-24
Total Training	1320	1124	-196

Living Qaurters			
Locker Room Male	200	0	-200
Locker Room Female	80	0	-80
Shower Restroom Male	280	60	-220
Shower Restroom Female	140	40	-100
Kitchen	300	180	-120
Day Room	200	0	-200
Fitness/Exersize	400	0	-400
Bedrooms (4)	432	0	-432
Janitorial	50	0	-50
Total	2082		-1802
General			
Utility/HVAC	300	48	-252
Hallways	1150	252	-898
Public Restrooms	90	0	-90
Total General	1540	300	-1240
Total Building	12994	5794.5	-6919.5

EMS Facilities

1. Apparatus Room

- a. Number type of Apparatus: The service currently has two ambulances.
- b. Condition: The physical condition of the building on this area is good.
- c. Space Utilization: The apparatus room has adequate space for the number of ambulances it currently has. The building originally was designed to house three ambulances and it did for a period of time. The service then decreased its fleet from three to two ambulances. This decrease allowed adequate space for vehicles. If the service were to increase its fleet back to three again, the space would not be adequate to house three ambulances.
- d. Vehicle Exhaust System: There is no vehicle exhaust system for the ambulances. It is recommended that a vehicle exhaust system be installed. It can be installed in the current location.

2. Personal Protective Gear:

- a. Storage: Personal protective equipment is stored against the walls in the apparatus bay. The lack of space between the walls/lockers and the apparatus result in a very cramped area for EMT's to don their gear when arriving at the station or for later arriving

personnel to pass by in the aisle way. Personal protective gear should be stored in a separate room and protected from UV light which contributes to the premature breakdown of the material. This room also should be directly accessible from the outside of the building where personnel park. Personnel arriving to the station during night hours or back-up calls would have access from the parking area to reduce turnout time from the station. The gear is close to the ambulances. When washing the ambulances during winter months, the gear is vulnerable to getting wet.

- b. Decontamination: Washer/Drying area: There is a washer and dryer for decontamination of clothing and equipment along with a sink at the rear of the station. The washer and dryer should be in an enclosed room for decontamination purposes only to reduce cross contamination. There needs to be a separate area for clean equipment to be stored along with a separate area for contaminated equipment to be stored.
3. **Vehicle Equipment Maintenance Area(s):** There is no vehicle and equipment maintenance area. There may not be a need to have such area as most preventative maintenance and repairs are outsourced. Any maintenance performed by staff can be accomplished in the area provided as long as there is only two vehicles in the fleet.
 4. **Apparatus/Cleaning Storage:** There is no vehicle or janitorial storage room/janitors' closet for the apparatus room.
 5. **Oxygen filling and Storage:** Oxygen filling should be provided by a qualified provider. Storage of such tanks need to be stored in an area that they are not exposed to contaminants. Contaminants that are hydrocarbon based coming in contact with oxygen cylinders can cause a fire. .
 6. **General Storage:** There are areas identified for storage; however, they do not fit the needs of the service. Medical supplies are stored in multiple areas because there is not enough room in a specific storage room. .
 7. **Office Space:**
 - a. Administration: There is an office for the director that should be maintained. The director needs to have the ability to engage in private conversations with employees and patients.
 - b. The crew has an office, but is shared with the training officer. The office is utilized for the crew for completion of medical reports and online training. To maintain the privacy of medical reports, the crew office needs to be a separate office. .
 - c. Storage and Support Area: There is a small storage area off the entrance that is used for medical supplies. The medical supplies should be stored on the apparatus floor. There should be a receptionist area for people visiting the station. It has been reported that during normal business hours the building receives a lot of visitors. Most of these

visitors inquire about ambulance invoices. There needs to be a separate area where staff can speak to patients about invoices.

8. **Training Facilities/ Community Space:** The training room/community room is adequate for training. The difficulty is that this room has become a multi-purpose room for storage of training materials and the area where the physical fitness equipment is stored. It is also reported that the room is utilized by groups from the community as a place to meet. The space should be evaluated to determine how much room that is needed for any of the listed uses.
 - a. **Living Quarters: Locker Room/Showers/Restrooms:** There are men's and women's bathrooms and showers located in the area of the bedrooms. There is no locker room space for any of the staff to store any personal belongings during a 24 hour shift.
 - b. **Day Room:** There is a day room and it is adequate sized for two people. The area would be too small in the event that there are more than two personnel. An example would be extra staffing during large events, bad weather, and personnel in training.
 - c. **Kitchen/Dining:** The station has a kitchen area adjacent to the day room. It is adequate sized for a crew of two; however, the same considerations would apply to the day room size.
 - d. **Sleeping Quarters:** The department does have sleeping quarters (four). One of the rooms has been converted to an office, reducing the amount of rooms available. It has been mentioned that even though there is only one person assigned to the evening shift in-house, it is common to have other staff staying over because of travel time. The same considerations would apply similarly to the day room size.
9. **Janitorial Closet:** There is a janitorial closet for the general station area and it is adequate for storage of station cleaning supplies.
10. **Station Storage:** There is no general storage area in the station.
11. **Security/Building Access:** The station is secured with combination locks for access. Utilizing an electronic locking/fob system would speed up building access and provide a log of personnel entering the building for additional security.
12. **HVAC Issues:** No significant HVAC issues were reported and the Chief. [???
13. **Electrical Issues:** There were no electrical issues reported.
14. **Plumbing Issues:** There were no plumbing issues reported.
15. **Handicap Accessibility:** The station is handicap accessible.

- 16. Flexibility/Expansion Potential:** There is no need at this time for expansion.
- 17. Parking:** The parking spaces provided is adequate for staff and staff responding to the station for emergency responses. Unlike the fire department there is a smaller number of staff that respond to the station.
- 18. Architectural Character:** The building has no significant historical building characteristics and is utilitarian in exterior design. The exterior has features that fit into the neighborhood and community.
- 19. General Comments:** The EMS building is fairly new, being built in 1995. The staff have maintained the building in very good condition. The location of the building is good for its response area. An upgrade of the station could be performed to reallocate space on the apparatus floor to identify areas for cleaning of contaminated equipment, storage of personal protective equipment and medical supplies. The office area could have an upgrade to reallocate space to provide offices for the director, training officer, staff and an area to have a private conversation with clients. The community room should be evaluated for its intended use. There is mention of community groups utilizing the room at times, but it should be evaluated on how many times this occurs and how much space is needed. Training room size for the service would not need to be as big and extra space could be utilized for workout space and needed storage of training materials.

Table 7: Current Actual and Recommended Space Comparison: EMS

Room/Component	Recommended Square Footage	Actual Square Footage	Adequacy/Deficiency
Apparatus Bay			
Ambulances 2	1360	1756.525	396.525
Total Apparatus Bay	1360	1756.525	396.525
Apparatus Support			
Cleaning/ Janitorial	100	0	-100
Breathing Air/Oxygen Storage and Filling	100	60	-40
Storage Room	400	103.9	-296.1
Rest Rooms	0	180	180
Total Apparatus Support	600	343.9	-436.1
Protective Equipment			
Storage Room	100	0	-100
DeconArea Laundry	150	21.75	-128.25
Total Protective Equipment	250	21.75	-228.25
Administration Office Space			
Chiefs Office	120	144	24
Staff Office	120	144	24
EMS Office	80	0	-80
Training Officer	120	0	-120
Storage Room	80	144	64
Total Administration	520	432	-88
Training			
Training/Classroom	360	1024.16	664.16
Storage Room	80	0	-80
Total Training	440	1024.16	584.16
Living Quarters			
Shower/Locker Room Male	80	66.6	-13.4
Shower/Locker Room Female	80	66.6	-13.4
Kitchen	150	262	112
Dinning	182	0	
Day Room	210	262	52
Fitness/Exercise	437	0	-437
Bedrooms (4)	432	320	-112
Janitorial	50	0	-50
Total	1621	977.2	-461.8
General			

Utility/HVAC	300	111.96	-188.04
Hallways	500	490.375	-9.625
Public Restrooms	90	123	33
Total General	890	725.335	-164.665
Total Building	5681	5280.87	-398.13

Room/Component	Reccomened Square Footage	Actual Square Footage	Adequency/ Deficiency
Apparatus Bay			
Ambulances 2	1360	1756.525	396.525
Total Apparatus Bay	1360	1756.525	396.525
Apparatus Support			
Cleaning/ Janitorial	100	0	-100
Breathing Air/Oxygen Storage and Filling	100	60	-40
Storage Room	400	103.9	-296.1
Rest Rooms	0	180	180
Total Apparatus Support	600	343.9	-436.1
Protective Equipment			
Storage Room	100	0	-100
Decon Area Luandry	150	21.75	-128.25
Total Protective Equipment	250	21.75	-228.25
Administration Office Space			
Chiefs Office	120	144	24
Staff Office	120	144	24
EMS Office	80	0	-80
Training Officer	120	0	-120
Storage Room	80	144	64
Total Administration	520	432	-88
Training			
Training/Classroom	360	1024.16	664.16
Storage Room	80	0	-80
Total Training	440	1024.16	584.16
Living Qaurters			
Shower/Locker Room Male	80	66.6	-13.4
Shower/Locker Room Female	80	66.6	-13.4
Kitchen	150	262	112
Dinning	182	0	
Day Room	210	262	52

Fitness/Exersize	437	0	-437
Bedrooms (4)	432	320	-112
Janitorial	50	0	-50
Total	1621	977.2	-461.8
General			
Utility/HVAC	300	111.96	-188.04
Hallways	500	490.375	-9.625
Public Restrooms	90	123	33
Total General	890	725.335	-164.665
Total Building	5681	5280.87	-398.13

Room/Component	Reccomened Square Footage	Actual Square Footage	Adequency/ Deficiency
Apparatus Bay			
Ambulances 2	1360	1756.525	396.525
Total Apparatus Bay	1360	1756.525	396.525
Apparatus Support			
Cleaning/ Janitorial	100	0	-100
Breathing Air/Oxygen Storage and Filling	100	60	-40
Storage Room	400	103.9	-296.1
Rest Rooms	0	180	180
Total Apparatus Support	600	343.9	-436.1
Protective Equipment			
Storage Room	100	0	-100
Decon Area Luandry	150	21.75	-128.25
Total Protective Equipment	250	21.75	-228.25
Administration Office Space			
Chiefs Office	120	144	24
Staff Office	120	144	24
EMS Office	80	0	-80
Training Officer	120	0	-120
Storage Room	80	144	64
Total Administration	520	432	-88
Training			
Training/Classroom	360	1024.16	664.16
Storage Room	80	0	-80
Total Training	440	1024.16	584.16

Living Qaurters			
Shower/Locker Room Male	80	66.6	-13.4
Shower/Locker Room Female	80	66.6	-13.4
Kitchen	150	262	112
Dinning	182	0	
Day Room	210	262	52
Fitness/Exersize	437	0	-437
Bedrooms (4)	432	320	-112
Janitorial	50	0	-50
Total	1621	977.2	-461.8
General			
Uility/HVAC	300	111.96	-188.04
Hallways	500	490.375	-9.625
Public Restrooms	90	123	33
Total General	890	725.335	-164.665
Total Building	5681	5280.87	-398.13

Facility Options

- 1. Remain in Current Facilities. This section highlights the major issues and concerns with the current facilities, but is not all-inclusive in its assessment.**

Fire Station Maintenance Issues The current fire station has several issues that need to be addressed beyond dealing with any space needs issues. The membrane roof needs to be replaced and is beyond its usable life expectancy. The cost for replacement can range \$30,000.00 to \$50,000.00 depending on any additional issues that may be revealed in the process. The support system for the front apparatus bay should be evaluated by a structural engineer to ensure that alterations to the roof beams have not compromised the safety of the building. Due to limited ceiling height, the main support I beams were cut through to accommodate moving the garage door openers closer to the ceiling for clearance. The electrical system needs major renovation, due to overloaded circuits and frequent breaker tripping, which are symptoms of a failing and unsafe system. It is difficult to estimate the cost but is likely to run in the tens of thousands of dollars. The plumbing system, primarily the drains on the apparatus floor, are showing signs of failure with frequent clogs and backups. This repair/replacement would also involve the opening of the concrete floor. Again, it is difficult to fully estimate without televising the drain system and or opening the floor. The approach/apron area to the apparatus bay on the Main Street side of the building is failing and sinking below the level of the building. This requires apparatus operators to accelerate while entering the building, which is a safety concern that needs to be addressed. The cost of necessary building maintenance items, not addressing any cosmetic improvements or space needs will require an investment of at minimum, \$100,000.00 to \$150,000.00 within the next two years.

As listed in the review of facilities, the current fire station has some very severe space limitations. Beginning with the most important functional area of a fire station is the apparatus bay. The issues revolve around limitations on door and ceiling height along with space between apparatus and walls of the building. In order to conduct routine vehicle checks and maintenance, fire apparatus need to be pulled outside of the building in order to raise the cab to conduct this work. The same issues require the engines to be pulled outside to load fire hose. Future fire apparatus purchased will require a custom designed to allow them to fit into the station. The greatest concern of this issue is that most likely, water tank sizes will have to be compromised. This is a major concern for a department protecting rural areas without a water system. Aisle ways between vehicles make it very difficult open compartments and remove equipment for inspection and maintenance while in the building. The crowded nature of the apparatus bay restricts the free circulation of personnel which does impact the times of turn out from the station. Personnel putting on their gear are blocking the main aisle into the building from Main Street. Mutual aid apparatus called to fill the Lodi station are forced to park outside of the building due to apparatus not fitting within the building. This is definitely an issue in winter months with concerns of freezing and damage of water tanks and pumps. Apparatus left outside must be left with the pumps engaged and idling at high to avoid damage. This are also lacks any storage or work areas for maintaining the fire apparatus and equipment. This adds to inefficiency and a cluttered space which is always a safety concern.

Areas for storage and cleaning of personal protective gear (PPE) are the next priority space issue of concern. As stated earlier, PPE is stored along the walls of the apparatus bay. This equipment should be stored in its own well-ventilated area, with limited exposure to UV light. The reasoning for this storage arraignment is safety and longevity of the equipment. The primary safety concern is to ensure that the integrity of the equipment is maintained so that is truly does as it is described, protecting the person that is wearing it. In order to do so, it must be kept clean and stored properly. Cleaning is extremely important, to remove toxins and carcinogens from the PPE after use to prevent health issues to firefighters as well as maintaining its protective integrity. While the department does have a commercial washer extractor, this area is very limited and is in the back apparatus bay. Improperly stored gear will have a diminished service life and at \$2,000.00 -\$2500.00 per set of gear represents a substantial expense (\$80,000-\$100,000) for not properly caring for this equipment. Lastly, but certainly not a low concern, the personnel impact of injury due to failed turnout gear could be the most costly issue of all, in human and monetary costs.

The support areas of the fire station also significantly lack both space and appearance. Beginning with essential functions, the restroom and shower facilities for the station are inadequate. There are single men's and women's restrooms and only a shower in the men's room. The shower in the men's room also serves as a janitor's closet for mops and cleaning supplies, a very unsanitary condition. Lack of shower facilities are a safety concern in that it is important for firefighters to

shower at the station as soon as possible after a fire to remove toxins and carcinogens and avoid carrying these contaminants to their homes. There is also no personal locker space for firefighters to change their personal clothes, to be cleaned at the station to again remove contaminants and to avoid bringing them home.

Office space is very limited and lacks the necessary privacy for both legal concerns and efficiency. The training room itself is fairly adequate with regard to space, but limited in functionality. There is no living or sleeping quarter's space in this station. When personnel are in the station for purposes such as in the recent flooding in the City or when the station is filled by mutual aid departments, there are no comfortable areas for them to occupy.

2. Addition to and Renovation of Current Fire Facility, No Changes to EMS Station.

To meet the maintenance and space needs of the current fire station, a major renovation and addition would be needed. The parking lot adjacent to the station is approximately 8,000 square feet and, in our research, we were told the original purchase of this property was for the intent of possible expansion of the station. We identified the need for additional space of approximately 6,900 square feet, which is theoretically possible with the current land space available. However, this addition would nearly consume all available designated parking for the station, which already is inadequate from a space and design standpoint.

If this option were chosen, the parking area could be used for a renovated and expanded apparatus bay, vacating the back bay where the tenders and grass rig are stored. The original station could be re-designed and partially demolished for the training, office and support areas. Partial demolition, could add some limited off street parking. The cost of the addition to the building would be that of new construction cost of \$165- \$190 per sq. foot. Although it is primarily apparatus storage that is required, plumbing (floor drains, water supply) and HVAC needs are substantial. The combination of addressing the maintenance needs of the existing station along with a significant re-purposing of the apparatus space to accommodate support areas would be near new construction cost. Beginning with the exterior, apparatus door space would need to be filled in and windows placed as needed. Service doors would need to be added in appropriate places for access and exiting requirements. Much of the floor would need to be removed to close current drains and run plumbing, electrical, and HVAC equipment to the renovated spaces. The HVAC system would most likely need a complete replacement to properly service the redesigned space. With the extent of the renovation, any code deficiencies from current building code would need to be addressed including the Americans with Disabilities Act (ADA) and energy efficiency. Essentially some exterior walls, floor and support structure

would remain from the old building, but most of the building current building would be altered or replaced.

If this option were chosen and all space needs for the building were met, there would be two remaining issues left unaddressed. The approach/apron of the station to Main Street still would be the same length. This is a safety issue for apparatus leaving and being backed in to the station. Parking would become more of an issue as most or all of the parking space would be used by the addition.

Estimated cost for this option are \$934,065 to \$1,385,500 for the addition and \$717,000 to \$825,000 for the renovations. Total cost estimates are \$1,651,000 to \$2,210,500 excluding architectural and engineering fees. These fees may add an additional 2% to 4% of project cost.

3. Construct New Fire Station, No Changes to EMS Station

This option addresses the space needs identified in the facility review and would be for a building of approximately 13,000 square feet. With commercial building costs in the range of \$190 to \$225 per square foot, this option for the building would be \$2,470,000 to \$2,925,000. Additional cost would be 2% to 4% for architectural and engineering fees and \$40,000-\$70,000 for civil engineering since this would be a new site and would require stormwater evaluation and design. Parking space would be an additional cost.

Land would need to be acquired for this option. The general rule of thumb that the total land space should be three times the space of the building to order to accommodate parking and open space. This is a requirement of a minimum of 39,000 square feet or just under one acre. This would not allow for any room for expansion and would have limited parking pace, so a two acre parcel would be more appropriate. Depending on location, this would add \$20,000 to \$200,000. Total Estimated Cost for this option range from \$2,838,000 to \$3,112,000 including building, design/engineering and land acquisition.

4. Construct New Station Combining Fire and EMS.

Another option identified in in the request for proposals is to combine the Fire and EMS Stations into one facility. This option would obviously require the largest square footage and property needs, but would have a lesser square footage need than separate facilities. There would not be any reduction in space for apparatus storage since the greatest share of space is for apparatus. The only significant reduction in space needs would be the combined training/community room space. This space is/would be duplicated in separate facilities and could be a shared space if the departments are co-located. There also would be some additional space savings in restrooms for

the public, hallway space and support areas. Table 8 shows the space needs for the combined departments in this proposed facility. Separate facilities have a space need of approximately 18,675 square feet whereas a combined facility would have a square footage need of 17,123 square feet. The savings of the shared space is approximately 1500 square feet. This model is based on having the EMS bays and living quarters/support areas separate from Fire. Additional square footage savings could be made if kitchen, day room, and locker areas were shared, which could reduce space by an additional 500 to 600 square feet. Staying with the largest size option for a combined facility, land space needs would be a minimum of 51,369 square feet or 1.17 acres. Some economies of scale would also be gained with architectural and engineering fees. Assuming a \$190- \$225 per square foot range for new building, this option would cost \$3,253,370-\$3,852,675. Additional cost for land would again be in the \$20,000 to \$200,000 range, depending on location.

Table 8: Space Needs in Combined Department

Room/Component	Fire Square Footage	EMS Square Footage	Total Building
Apparatus Bay			
Engines 2	1872	0	1872
Tenders 2	1872	0	1872
Rescue/Squad 1	936	0	936
Brush 1	384	0	384
Utility 1	384	0	384
Antique Vehicle Storage	224	0	224
Ambulances 2	0	1360	1360
Total Apparatus Bay	5672	1360	7032
Apparatus Support			
Maint. / Repair	200	0	200
Cleaning/ Janitorial	100	103.9	203.9

Storage Room	400	180	580
Total Apparatus Support	700	283.9	983.9
Protective Equipment			
Storage Room	500	100	600
Decon Area Laundry	300	150	450
Breathing Air/Oxygen Storage and Filling	200	60	260
Total Protective Equipment	1000	310	1310
Administration Office Space			0
Chiefs Office	120	120	240
Conference Room	120	100	220
Officers Office/ EMS Offices	240	180	420
Storage Room	80	80	160
Fire Inspection Office	120	0	120
Total Administration	680	480	1160
Training Shared			0
Training/Classroom	1120	0	1120
Office	120	0	120
Storage Room	80	0	80
Total Training	1320	0	1320
Living Qaurters			0
Locker Room Male	200	80	280

Locker Room Female	80	80	160
Shower Restroom Male	280	80	360
Shower Restroom Female	140	80	220
Kitchen	300	150	450
Dining		144	144
Day Room	200	200	400
Fitness/Exersize Shared	400	0	400
Bedrooms (4)	432	432	864
Janitorial	50	50	100
Total	2082	1296	3378
General shared			0
Uility/HVAC	300	100	400
Hallways	1150	300	1450
Public Restrooms	90	0	90
Total General	1540	400	1940
Total Building	12994	4129.9	17123.9

5. Add Satellite Station in Harmony Grove.

A station in the Harmony Grove area would be designed primarily for the purposes of storing an additional fire apparatus. It would have minimal support areas. Essentially this building would be a garage to store the apparatus. It should be adequately sized to house a single full size fire apparatus for future considerations, but would be used to house a mid-sized fire apparatus to meet current demand and improvement. In addition to the apparatus bay, a single unisex restroom and storage area/ janitor closet for cleaning the station and vehicle would be the only support area needed. A structure of approximately 1,100 square feet would meet the needs to store the fire engine, a PPE storage area for ten personnel and a single unisex restroom. While it was not within

the scope of our project to review operations in depth, our recommendation to control cost and meet minimal ISO needs is to place a mini pumper apparatus on this station. This pumper would need to meet minimum ISO recognition as a fire engine/pumper so it would have to meet NFPA 1901 fire engine apparatus specifications. These minimum requirements are a 750 GPM pump, 300 gallon water tank, and minimum equipment carrying capacity for hose, ladders and tools. There are standard apparatus designs that fit this specification and cost is in the range of \$250,000 to \$300,000 dollars versus the cost of a full-sized engine of \$550 to \$700,000. There are also some advantages of adding this type of apparatus to the fleet in that its size improves accessing structures with long narrow driveways and steep terrain. An example of this type of apparatus is shown in Appendix B.

Location Options

Remain in current Locations

The current locations of the stations serve the City of Lodi very well. With regard to ISO response standards of a fire station within 1.5 miles of all areas served by a water system, the current fire station location is ideal. None of the other response models considered had a better coverage for the City of Lodi than the current location. However, the combination of the City being at the southern portion of the district and the fire station near the center of the City, this location is not ideally located for the fire district as a whole. To not negatively impact the 1.5-mile initial ISO distance for the City of Lodi, the fire station needs to be located at this location or within the vicinity. The shortcoming of the current fire station location is land space. To meet the space need of just the fire department, the current parking area would need to be completely used. See Map (). The response/travel time map shows that the five minute travel line and 10 minute lines correlate vary closely to the ISO 1.5 mile and 5 mile travel distance benchmarks. The 14 minute travel time, the maximum travel time considered for rural area coverage under NFPA standard 1720 is covered for the entire district from the current location. It needs to be noted that NFPA is national standard or best practice as it stands and does not have any legal precedence or financial advantage in meeting in and of itself.

The EMS station location in both the computer models and call data review indicates that the current location meets expected response time goals. See Maps (2-4)

Construct New Facility near County Highway J and Highway 113

This site was chosen to improve response times to the north and western portions of the district. Moving the station to this location does bring the majority of the Town of West Point into the 5 mile response range for ISO purposes as well as the unincorporated area of Okee in the Town of

Lodi. However, it does leave the southwestern portion of the City of Lodi, outside of the 1.5 mile response distance which is the optimal response distance for full credit in the ISO. This area would be approximately $\frac{1}{4}$ to $\frac{1}{2}$ mile beyond the optimal distance which would add 30 seconds to 1 minute to response times in this area. We need to note that response distance is one of many elements that lead to the ISO score which is currently a four for the City of Lodi area covered by the municipal water system. This distribution of resources section of the ISO score has a maximum value of ten points and under the current location it is scored at 7.01 points. An overall score of 60 to 69 points receives a four rating, Lodi Area Fire district overall score is 65.05. It is highly unlikely that this configuration would affect the distribution section by more than 50%. More likely about 25%, or a reduction of total score of 1.9 to 3.75 points could be expected. This would still leave a score of 63.15 to 61.3, which would still be an ISO rating of 4. We believe this loss of points in this area could be made in other areas to offset some of the point loss and ensure no loss in rating. This will be covered in the recommendations section in more detail. See Map 5.

Construct New Facility near Fair Street and County J

This site was selected due to its potential to improve response distance primarily to the more densely populated areas in the Town of Lodi, and Harmony Grove. Unfortunately, this model shows there was minimal improvement to the Harmony Grove area as well as to the Town of West Point. This location also had similar to slightly more negative impact on response distance in the City of Lodi. This area also is beyond the utility service area for the City and would have added cost for development to provide water and sewer service. See Map 6

Construct an Additional Station in Harmony Grove

This station option was added and explored for two reasons. The most significant reason is that this area is served by a municipal water system for which it receives no IOS credit for protection due to the fact that the existing station is not just beyond the 1.5 mile range but beyond the five mile limit for any distribution credit. Locating a station in this area would put a station/ fire engine company within the 1.5 to the Northern portion of the Town of Lodi. There is the possibility of upgrading the ISO rating for this area. This station would need to have a fire engine (pumper) with a minimum 750 gallon per minute pump and carry at least 300 gallons of water. This is possible on a small chassis vehicle such as a Ford 550, which to put into perspective is the size of many ambulance chassis. (See Appendix B) There are also ten members of the department that lie in Harmony Grove or 26% of the current roster. Based on the population density of this area, this number of firefighters is not likely to change and may actually increase.

This station location is independent of the location of the main station and two different combinations of the Harmony Grove Station with the propose main station locations are shown in the appendix. See Maps 7 and 8 in Appendix A

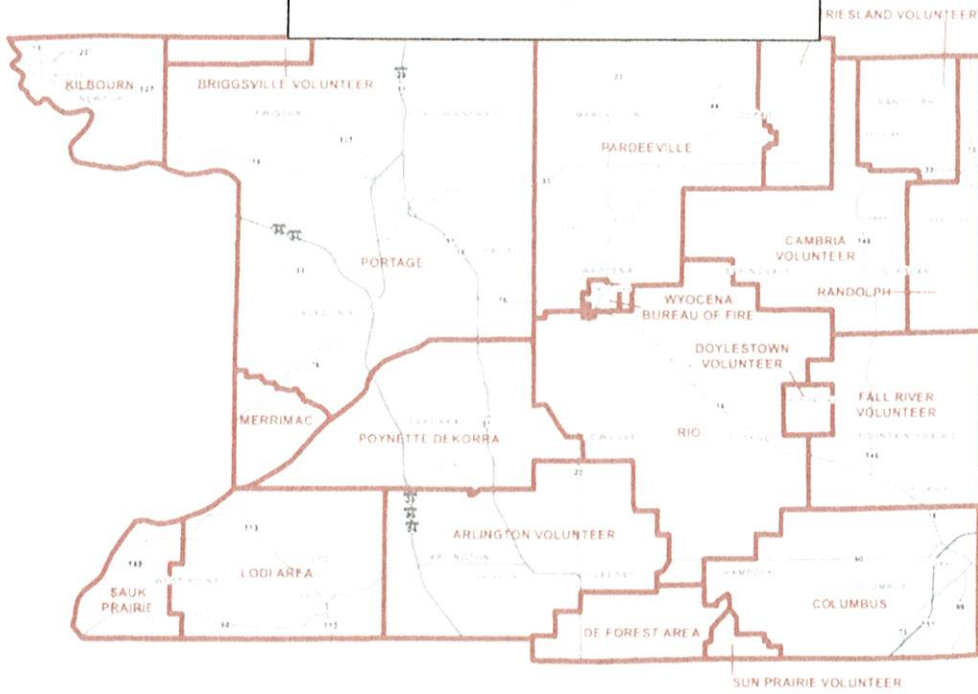
Study Recommendations

- The current fire station needs to be replaced for the reasons of both condition and lack of space. Both of these reasons carry additional safety concerns that were previously outlined in the report. A new fire station should be constructed to meet the operational and safety needs of the fire department.
- The current EMS station, has a few minor space issues but overall is in good condition since it is relatively new and meets the space and operational needs of the EMS department. This station should meet the needs and demands for emergency medical services for the next twenty years. At the beginning and throughout the process, the options of co-locating the fire and EMS departments was discussed and reviewed. There is no compelling reason to replace or move this facility at this time. Moving this facility at this time would not provide any significant service improvements and would add significant capital cost to the communities of the district.
- The current location of the fire department, while optimal for the City of Lodi from an ISO response distance perspective, is not in an optimal position for the district as a whole. In addition, the current location, lacks sufficient property space for the size of building needed and parking areas. The area within a quarter mile of the station would still provide a good location; however, there are no undeveloped plots of sufficient size at this time in this area to accommodate the space needs of a new building. The study does not recommend renovating the current building or constructing a new building on this site.

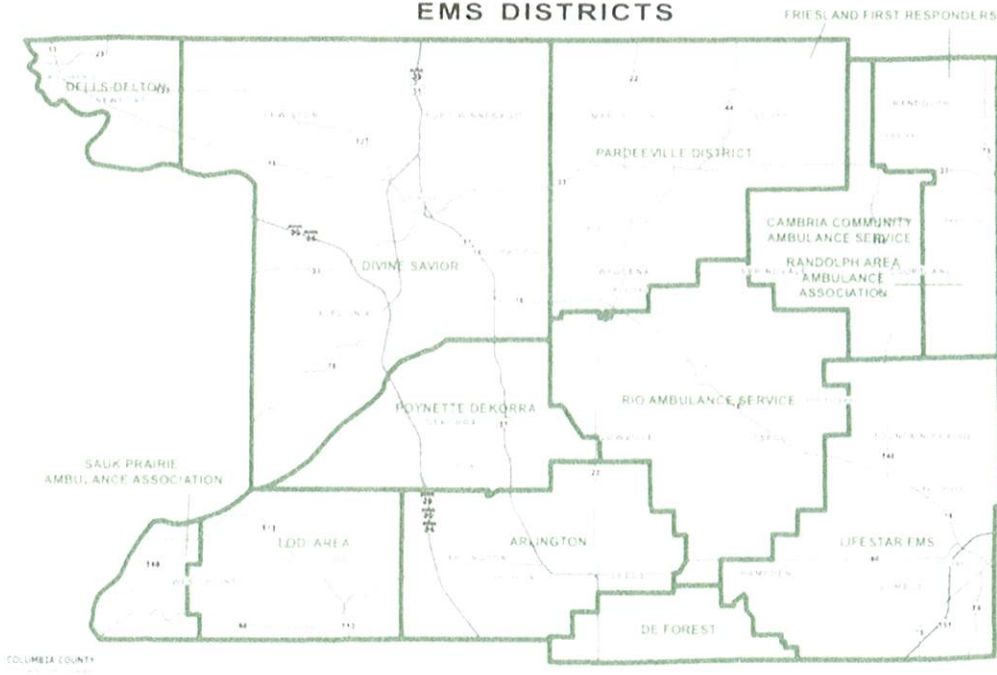
- The area near State Highway 113 and J, would provide improved response distance for the northern and western portions of the district. While the south and southwestern areas of the City of Lodi would be beyond the ideal distance for ISO purposes, it would still be credited, just not at the current level. Response times to this area of the City would be increased by one to one and one half minutes. There are undeveloped parcels within one quarter mile of this intersection with sufficient space for a new fire station and adequate parking. The study recommends this option.
- An additional fire station should be constructed in the Harmony Grove area. This would not only put this area within the maximum five mile range but provide 1.5 mile coverage for the area served by the municipal water system. This would provide fire protection recognition and credit for the properties in this area as well as improve initial response times. This would only need to be a small station as discussed previously in the report and could be minimally equipped with a mid- sized engine that meets minimum ISO requirements. We also recommend that members of the fire department that live in the Harmony Grove area be cross trained as Emergency Medical Responders (EMR's) to improve initial response times for life threatening emergencies in this area.
- While it was not within the scope of this study to examine the feasibility and efficiencies that could be gained by combining Fire and EMS services into one department, this concept was raised with the study team on several occasions. The facility needs and options presented did not take a merged Fire-EMS service into consideration and space needs were evaluated and presented accordingly. A fully combined Fire and EMS service could present additional economies of scale in a single building if the departments were fully combined. The living quarters would be shared spaces, but would require two additional dorm rooms in addition to the fire station only design. The classroom and support areas would be adequate to serve the needs of both services. The most substantial need would be the need to increase the apparatus bays to accommodate the two ambulances.

APPENDIX A

Map 1

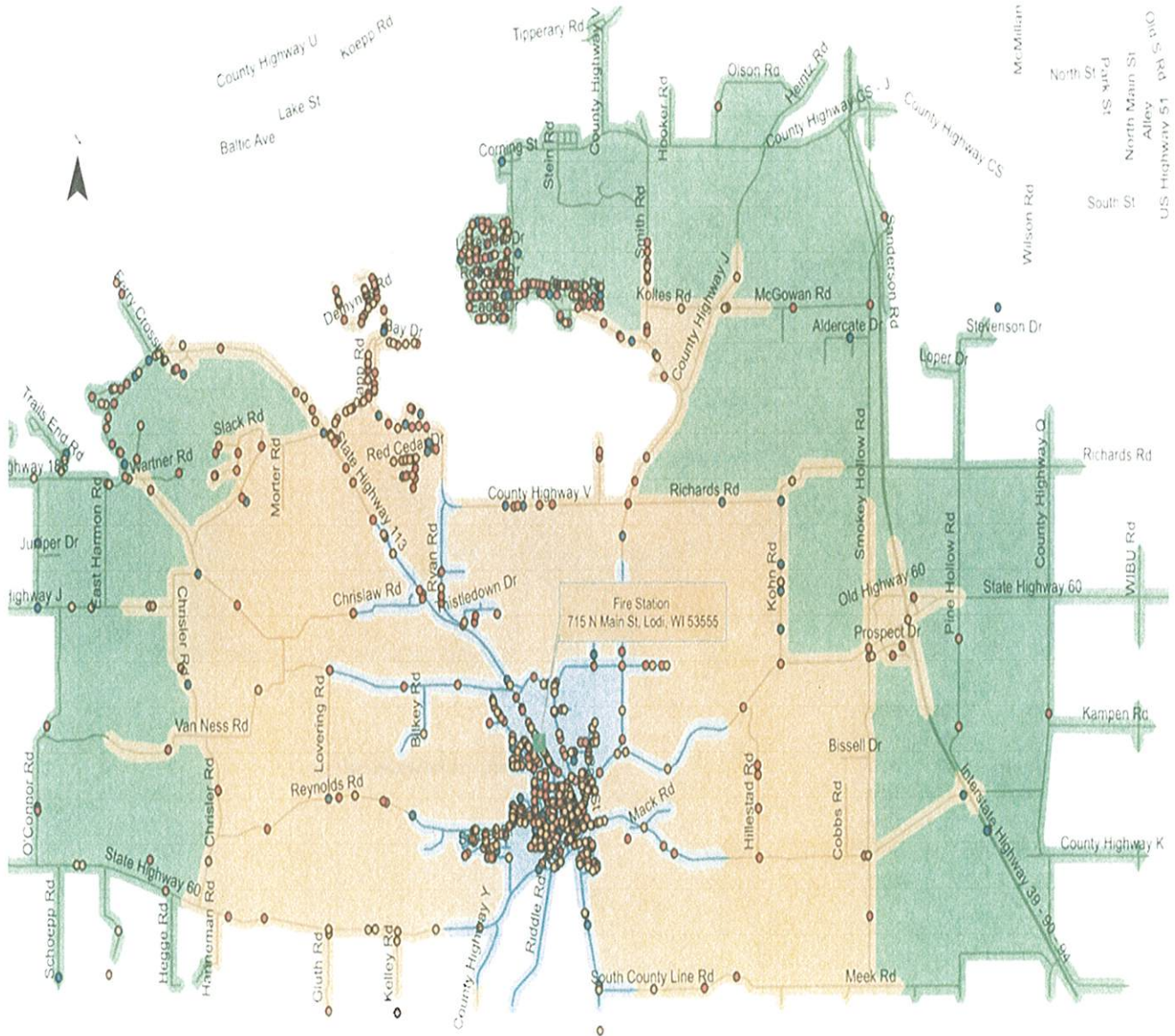


EMS DISTRICTS



Map 2

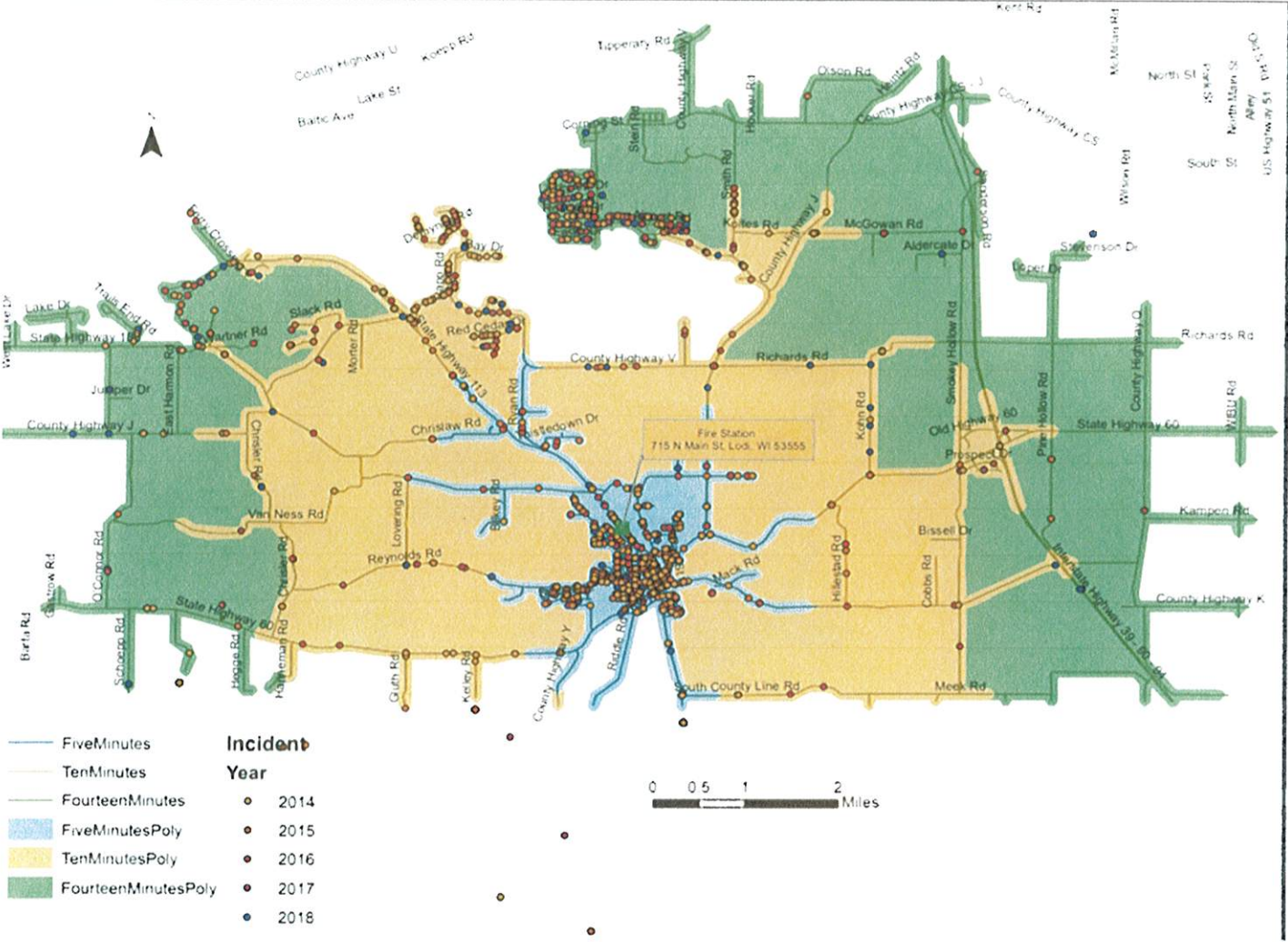
Current EMS Station Location Time Based Response and Location of Calls for Service



Response Time	Year
Under 15 Minutes	2014
15-20 Minutes	2015
20-25 Minutes	2016
Over 25 Minutes	2017

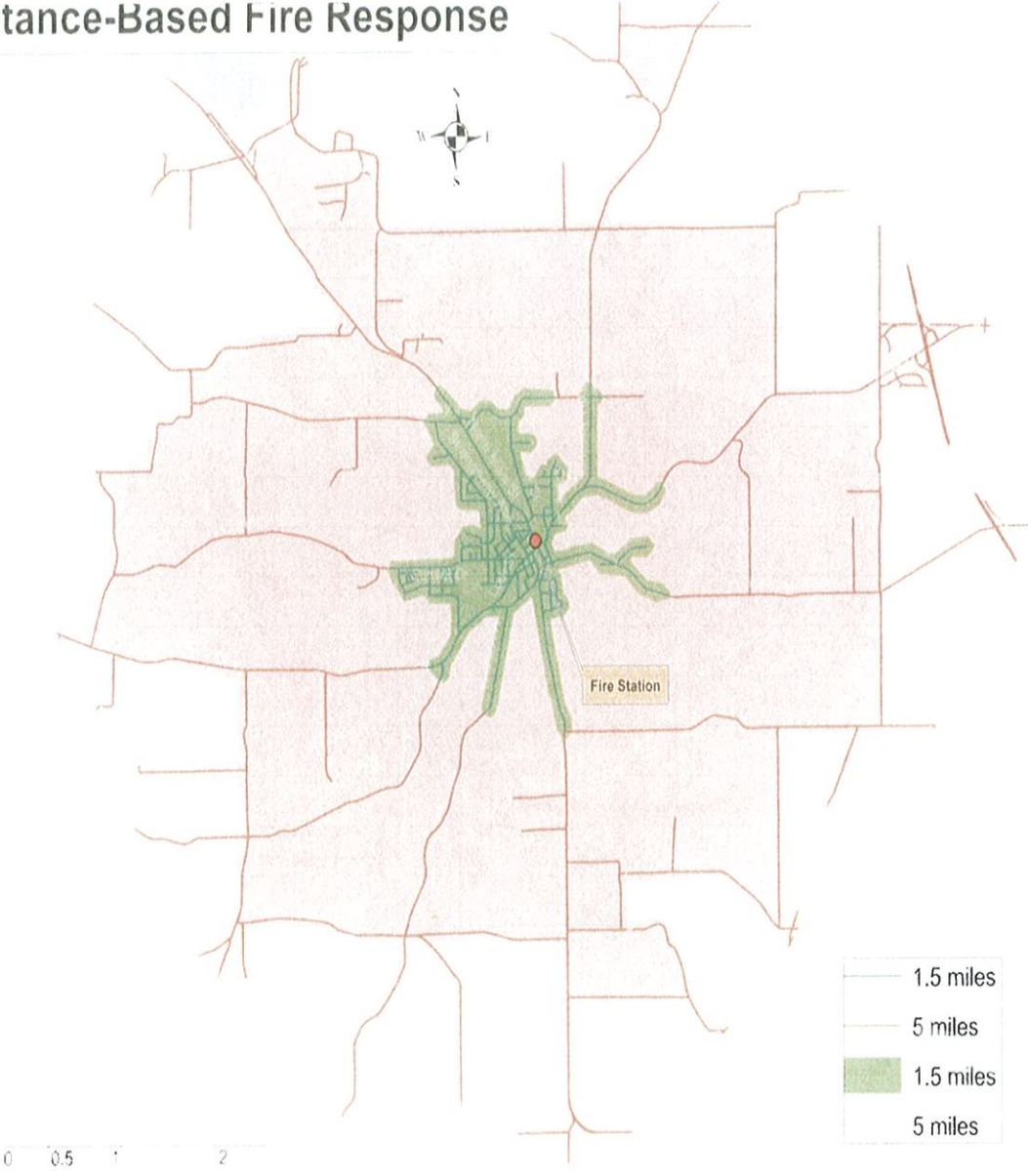


Map 3 Current Fire Station Location Time Based Response and Location of Calls for Service



Map 4
Current Fire Station Location
ISO Distance Based Response

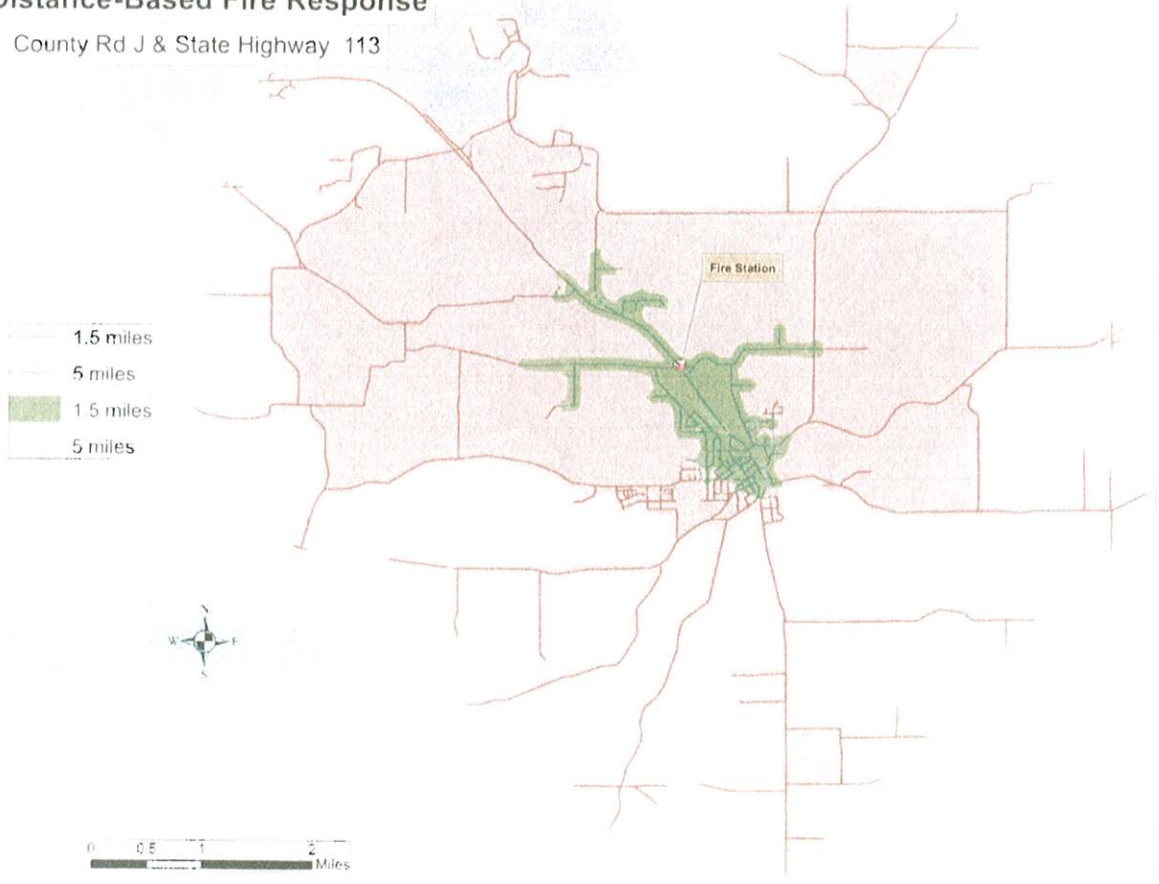
Distance-Based Fire Response



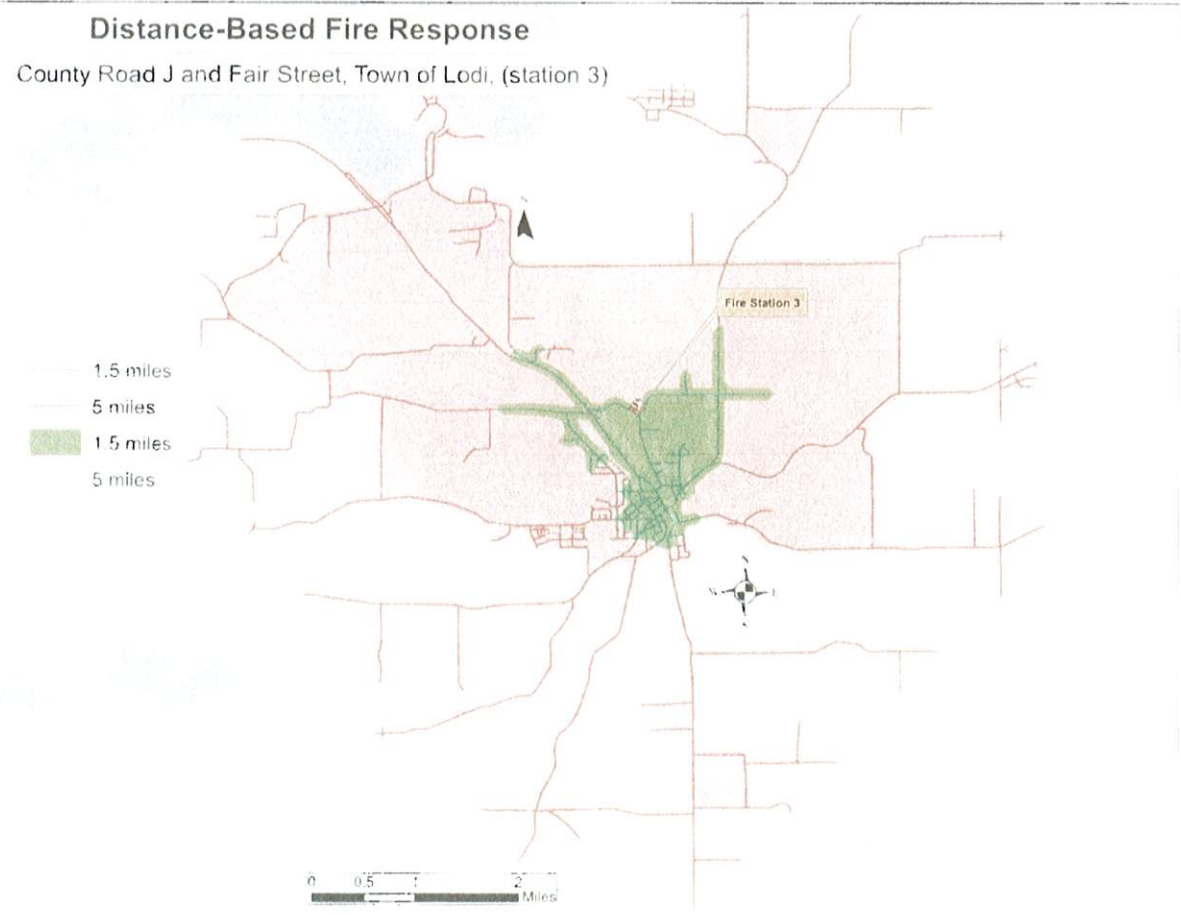
Map 5
Proposed Station Location
ISO Distance Based Response

Distance-Based Fire Response

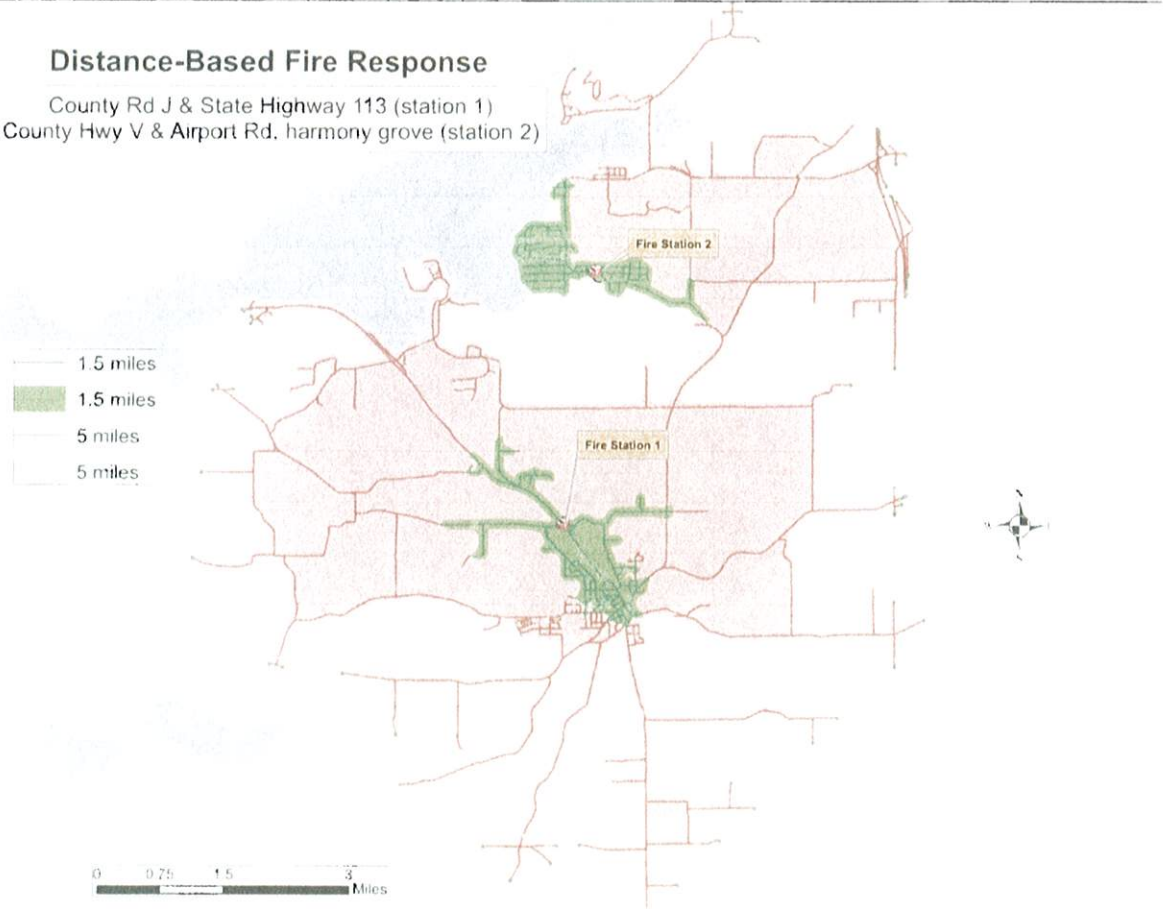
County Rd J & State Highway 113



Map 6
Proposed Station Location
ISO Distance Based Response



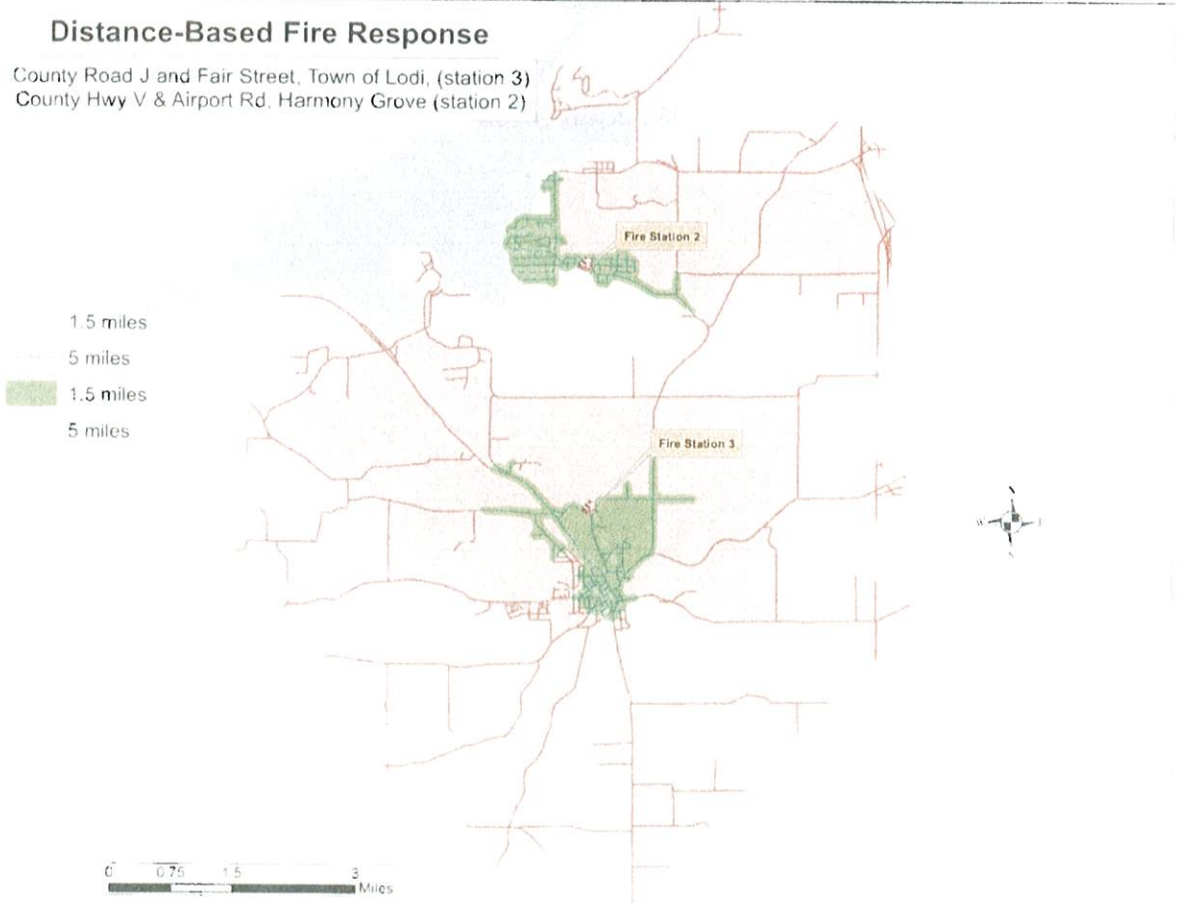
Map 7
Proposed Station Location
ISO Distance Based Response



Map 8
Proposed Station Location
ISO Distance Based Response

Distance-Based Fire Response

County Road J and Fair Street, Town of Lodi, (station 3)
County Hwy V & Airport Rd, Harmony Grove (station 2)



Appendix B



Example of NFPA 1901 minimally compliant fire engine to meet minimum ISO fire apparatus requirement