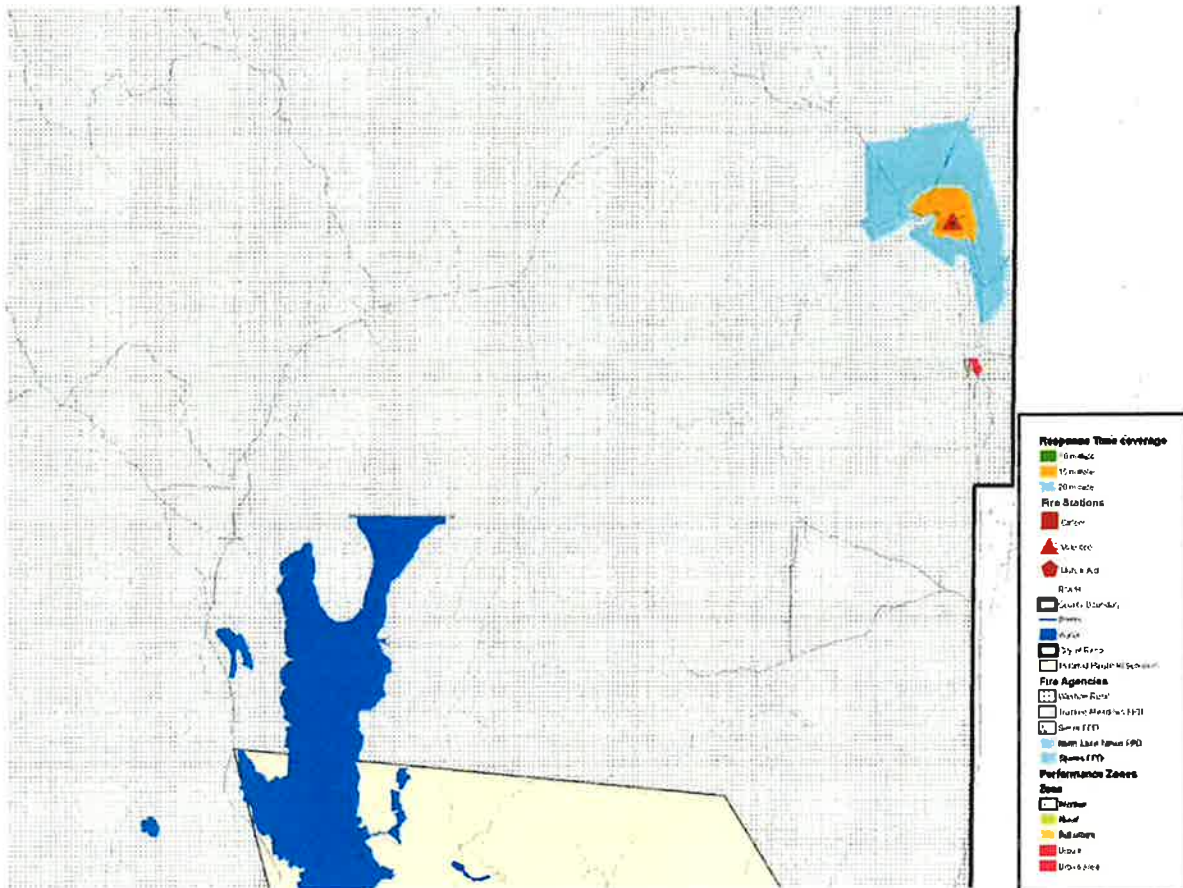


Figure 23: 10, 15, and 20-Minute Response Coverage – Gerlach Area



Further analysis reveals that during the study period 3,268 of 4,810 incidents in the Suburban performance zone (68 percent) occurred within the 10-minute response service coverage area; 200 of 479 incidents in the Rural performance zone (42 percent) occurred within the 20-minute response service coverage area.

Effective Response Force Coverage

For the purpose of this analysis, a target ERF response time of within 12 minutes from receipt of call, 85 percent of the time, will be used for the City of Reno urban area and within 15 minutes from receipt of call, 85 percent of the time in the region's suburban area. ERF for the rural area will be evaluated at within 25 minutes from receipt of call, 85 percent of the time.

The following maps depict the physical capability of regional resources to assemble sufficient apparatus within the specified times. The modeled analysis shown assumes that all response

units are available. At current staffing levels, the assembly of sufficient numbers of apparatus also provides the minimum number of firefighters.

Figure 24: Effective Response Force – Urban and Suburban

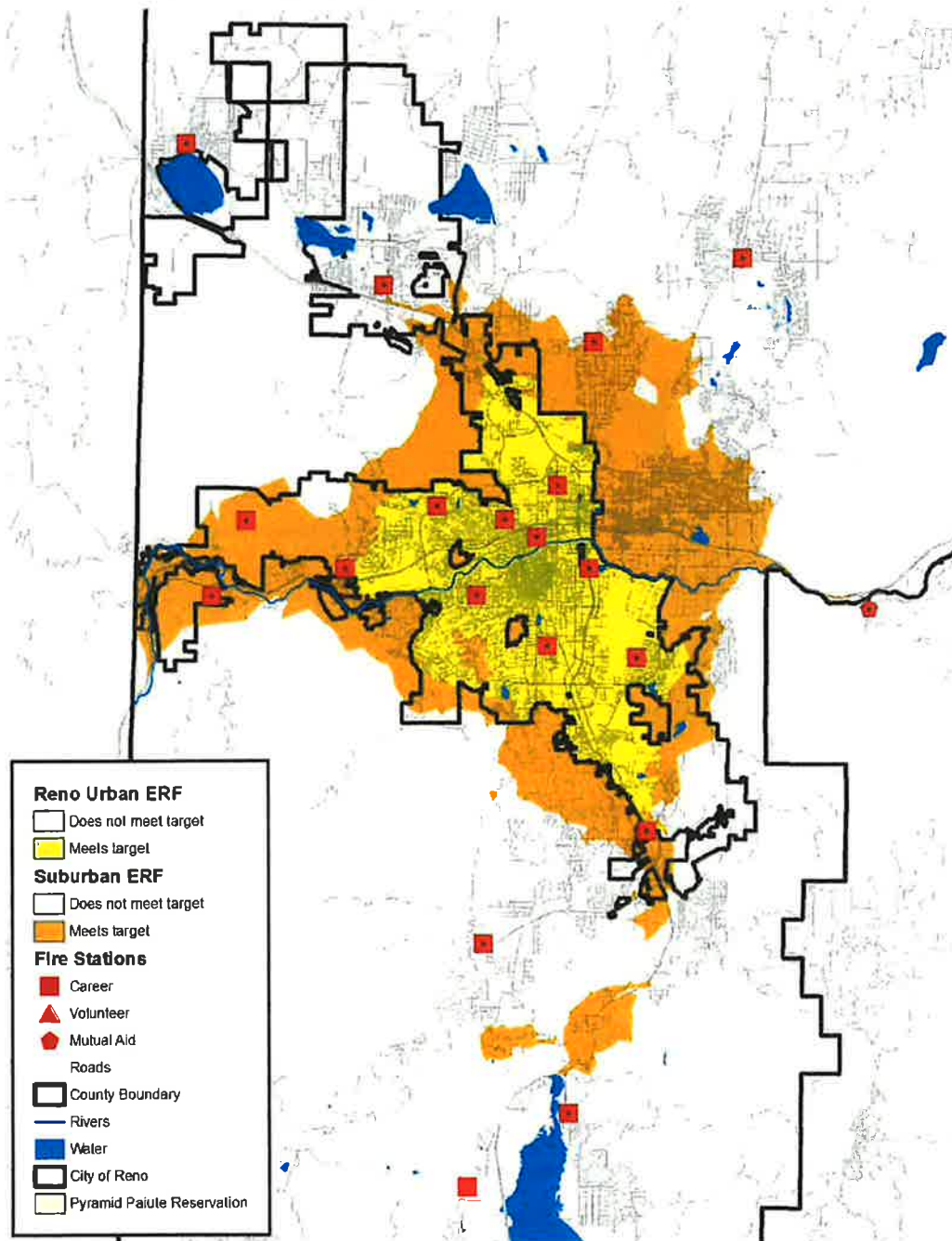
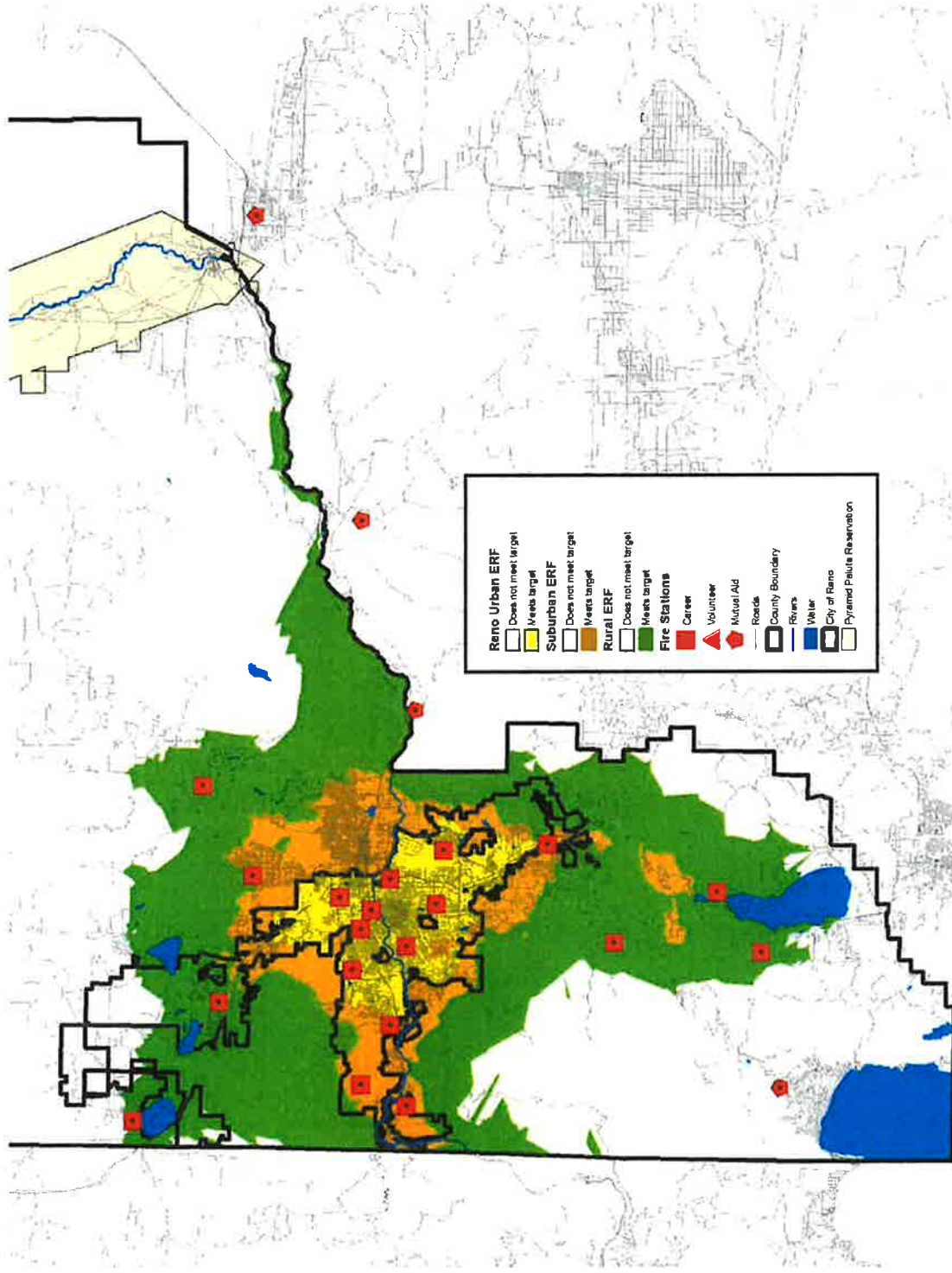


Figure 25: Effective Response Force – Urban, Suburban, and Rural



Suburban level coverage (within 15 minutes from receipt of call) does not serve all of the region's suburban area. Areas in and around north Reno as well as areas within Washoe Valley do not have sufficient apparatus and personnel to achieve target performance.

Rural level coverage (within 25 minutes from receipt of call) is more widely available, but areas in the far southern part of the county, north of Reno, and east of Reno also do not have sufficient apparatus and personnel to achieve target performance.

Response Performance Objectives

The following section describes the emergency response performance levels that are reasonable and achievable for the City of Reno, Sierra Fire Protection District, Truckee Meadows Fire Protection District, and Washoe County Fire Services region (Region). Where desired performance is not currently met, actual current performance is described.

A community's desired level of service is a uniquely individual decision. No two communities are exactly alike. Performance objectives must be tailored to match community expectations, community conditions, and the ability to pay for the resources necessary to attain the desired level of service.

Levels of service and resource allocation decisions are the responsibility of the elected officials of each jurisdiction. The policy making bodies must carefully balance the needs and expectations of its citizenry when deciding how much money to allocate to all of the services the jurisdiction provides. For the Region this is further complicated by current economic conditions.

With this in mind the following response performance objectives are recommended as the Region's fire and life safety response performance objectives. **These are not levels of service that must be achieved immediately but instead are targets for achievement when resources are available to do so.** Later in this report are recommendations that will help accomplish that goal.

Call-Processing Performance Statement

In many areas of the country, call handling or call processing are not functions under direct control of the fire department. This is the case in Reno. RFD is provided communications and dispatch services through by the Reno Department of Communication and Technology Communications Center (ECOMM). The dispatch center is the primary Public Safety Answering Point and dispatch center for Reno fire and police, the Washoe County Sheriff's office, University of Nevada-Reno Police, Truckee Meadows Community College Police, Sierra Fire Protection District, and Washoe County Alternative Sentencing. The Regional Emergency Medical Service Authority operates its own dispatch center.

ECOMM is managed by a Communications Manager along with Shift Supervisors who are on duty with each shift in the center. The center uses cross-trained dispatcher/call-taker positions

and typically dedicates at least one communications position to the dispatch function for fire and EMS. ECOMM has established the following performance objectives:

1. 97 percent of incoming calls will be answered within 10 seconds or less.
2. 100 percent of Priority 1 (imminent threat to life) calls will be entered and dispatched within five minutes.
3. 100 percent of Priority 2 (no imminent threat to life) calls will be entered and dispatched within 15 minutes.

ECOMM is meeting its performance objective for the Region 96 percent of the time. Many of the longer dispatch times appear to be anomalies that should be excluded. With those excluded, ECOMM is meeting its performance objective 97 percent of the time.

ECOMM should consider aligning its performance objective to dispatch incidents more closely with national guidance, specifically National Fire Protection Association *Standard 1221*. This standard recommends that calls be entered and dispatched within 60 seconds, 90 percent of the time. ECOMM's current performance against this standard is within 60 seconds, 51 percent of the time.

Turnout Time Performance Statement

Turnout time is one area over which the fire department has total control. Turnout time, or the time between when the call is received by the response units (dispatched) and when the unit is actually en route to the scene (responding), can dramatically effect overall response time.

A national standard⁸ recommends turnout time performance of 80 seconds or less for structure fire response and 60 seconds or less for all other priority responses. Current Region turnout times are longer than this. Reno Fire Department turnout time is within 2 minutes 22 seconds, 85 percent of the time. Sierra Fire Protection District and Truckee Meadows Fire Protection District turnout time is within 2 minutes 25 seconds, 85 percent of the time.

Given that turnout time is one area in which field personnel can improve overall response time, an aggressive objective is recommended. With this in mind, the following Turnout Time Performance Objective is recommended:

1. For 85 percent of all priority responses, the Region fire agencies will be en route to the incident in 90 seconds or less, regardless of incident risk type.

⁸ National Fire Protection Association *Standard 1710*.

Two ERF service level tiers are offered for consideration by policy makers. Each builds on the previous providing more prompt response and a resulting higher level of performance. Service Tier One reflects currently achievable performance. Tier Two offers policy makers the opportunity to understand the scope and cost of resources that will be required to improve levels of service in the future.

Effective Response Force Service Tier One

- Urban: The full effective response force to a moderate risk incident should arrive within 10 minutes, 85 percent of the time from the receipt of call.
- Suburban: The full effective response force to a moderate risk incident should arrive within 20 minutes, 85 percent of the time from the receipt of call.
- Rural: The full effective response force to a moderate risk incident should arrive within 30 minutes, 85 percent of the time from the receipt of call.
- Frontier: The full effective response force to a moderate risk incident should arrive as soon as practical based on the best effort of response forces.

Effective Response Force Service Tier Two

- Urban: The full effective response force to a moderate risk incident should arrive within 10 minutes, 85 percent of the time from the receipt of call.
- Suburban: The full effective response force to a moderate risk incident should arrive within 15 minutes, 85 percent of the time from the receipt of call.
- Rural: The full effective response force to a moderate risk incident should arrive within 25 minutes, 85 percent of the time from the receipt of call.
- Frontier: The full effective response force to a moderate risk incident should arrive as soon as practical based on the best effort of response forces.

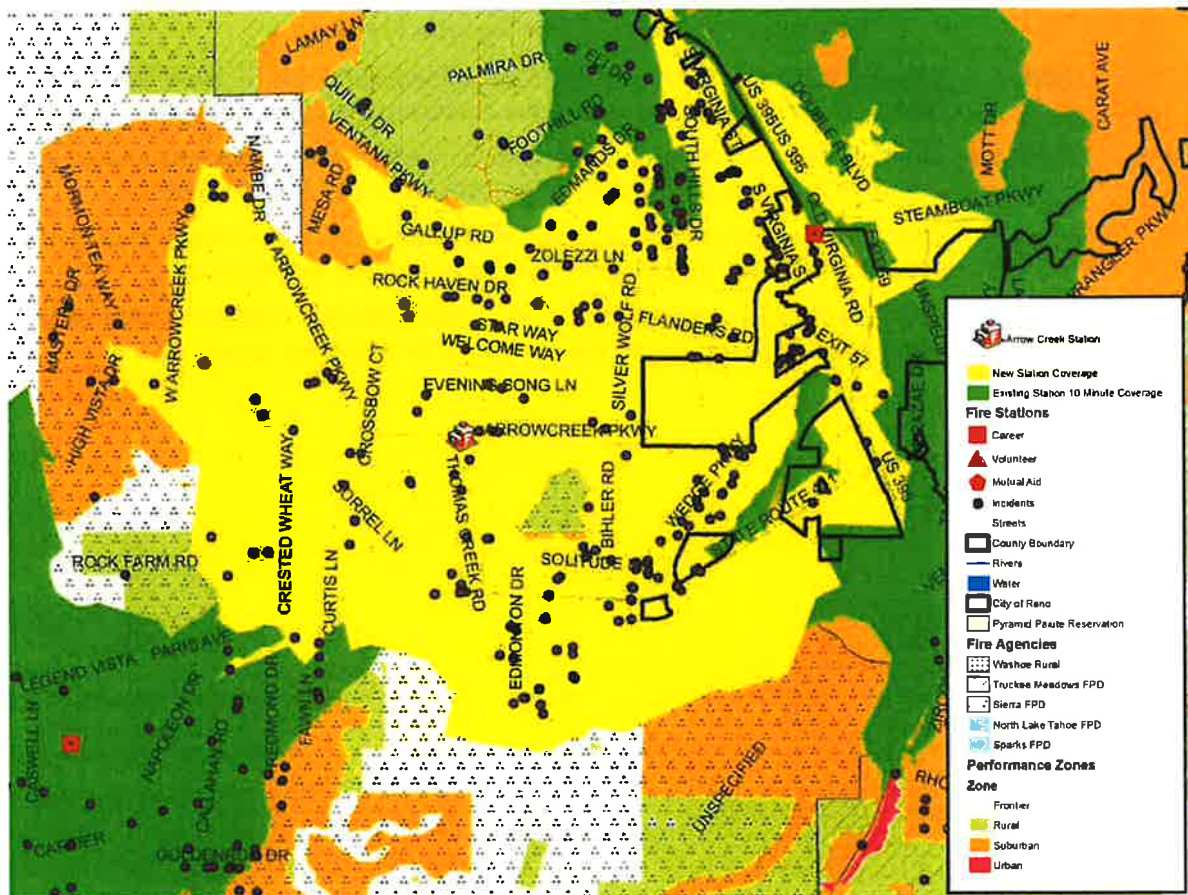
Deployment Needed to Achieve Service Tiers

As evidenced by the analysis, currently defined service levels are not attainable with existing resources. In order to achieve currently defined Suburban Zone response time objectives additional resources will be needed. The following describes recommended locations for new resources as well as the relocation of one existing fire station in order to meet the response time objectives of Service Tier One.

Service Tier One Deployment Recommendations

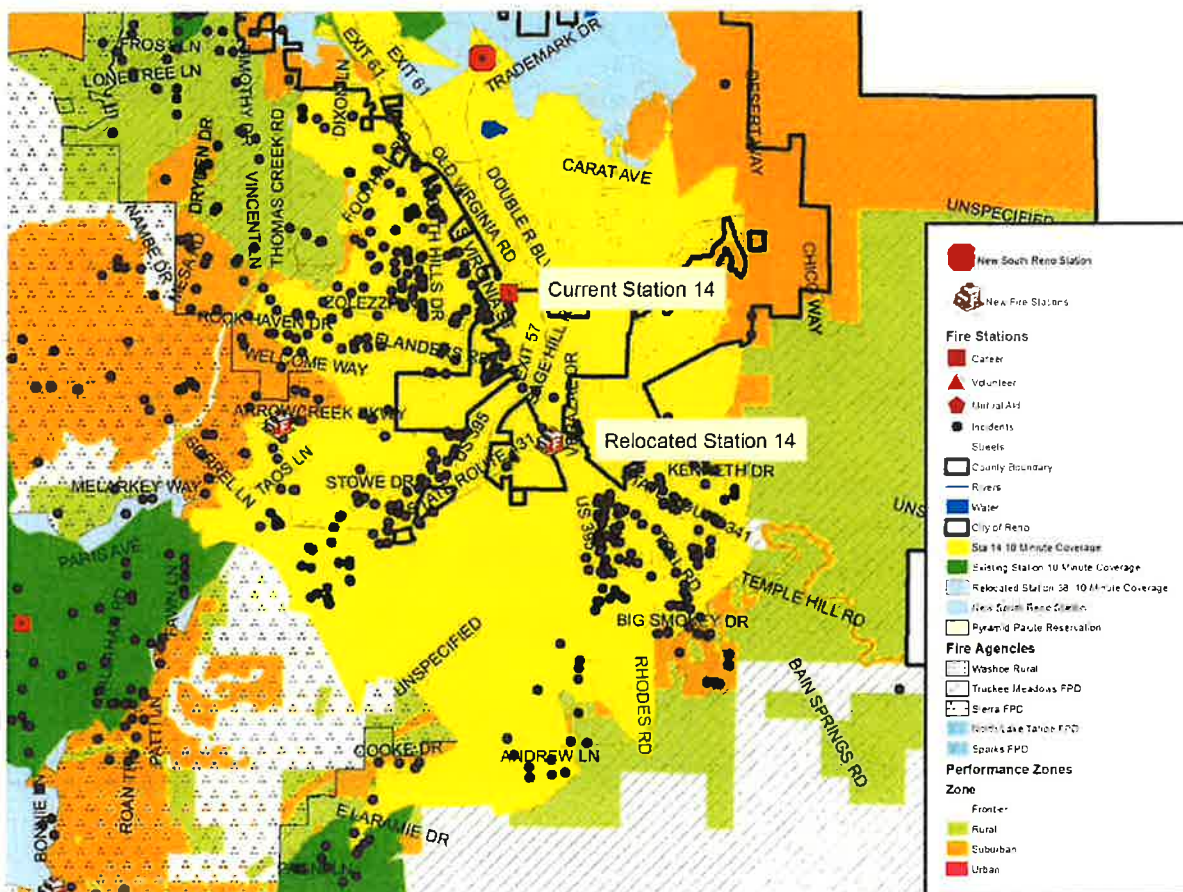
The first additional resource recommended is the Arrow Creek area fire station. The map below shows its location at the property acquired for this purpose (Arrow Creek Parkway and Thomas Creek Road) and the area it can serve within the ten-minute response time objective for the Suburban Zone.

Figure 26: Arrow Creek Station Location



Placement of a fire station on this site creates a significant amount of overlap of the coverage provided by Truckee Meadows Fire Station 14. A better location for Fire Station 14 (S. Virginia and Geiger Grade Roads) is shown in the map below. This relocation brings more Suburban Zone land within the ten-minute response time objective. **Implementation of this recommended fire station relocation is highly contingent on implementation of the recommendation in the Reno Standards of Cover report for a new south end fire station located at Double R Boulevard and Double Diamond Parkway.**

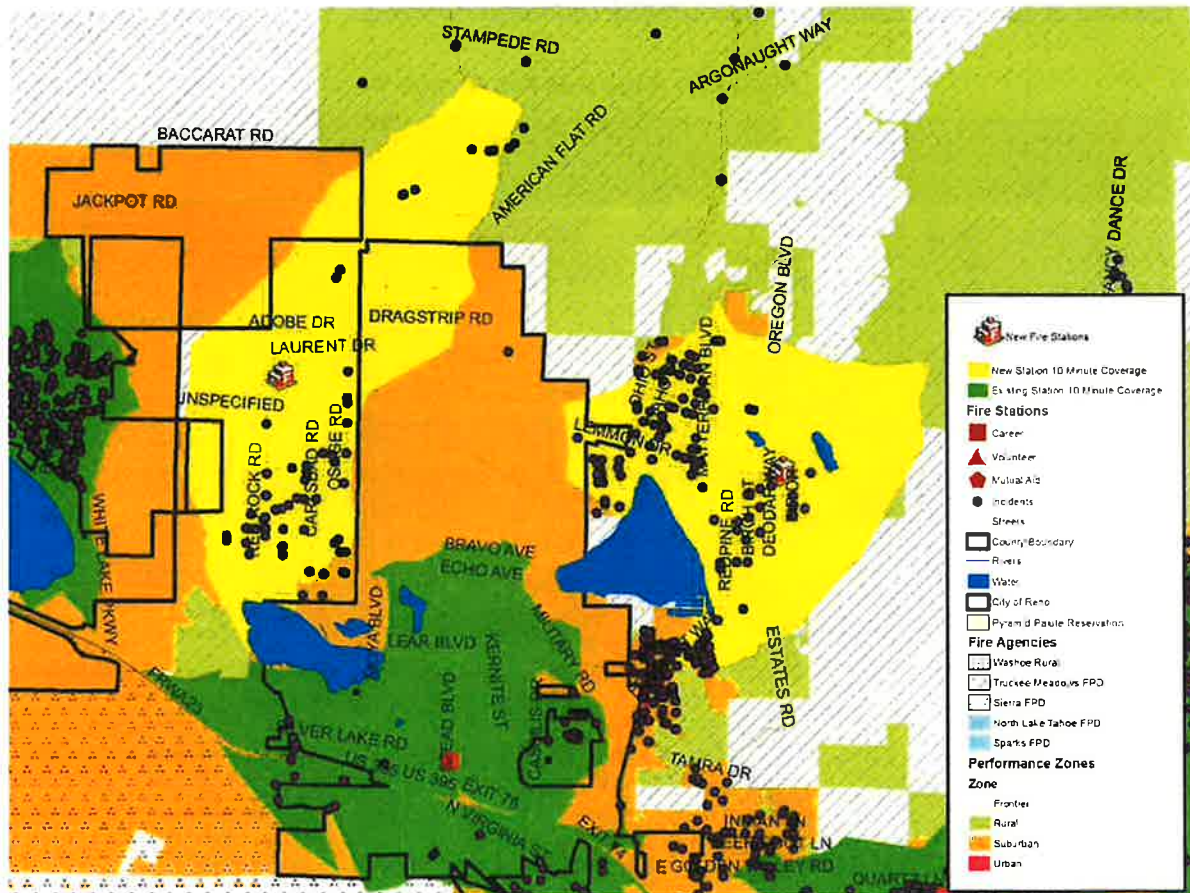
Figure 27: Relocated Fire Station 14



The Reno Standards of Cover plan recommended two additional stations north of the City of Reno in the future. Incident activity is low in the area, but it does contain underserved Suburban Zone land. In addition, it is an area with insufficient resources to provide the effective firefighting force within reasonable response time objectives.

The following map shows the locations of these two stations. One is recommended at Red Rock Road and Placerville Road and the other at Deodar Way and Chickadee Drive. *The station proposed on Red Rock Road was also recommended as a future fire station location (Station A) in the Reno Standards of Cover report. These locations diminish the need for Reno Fire Station 9.*

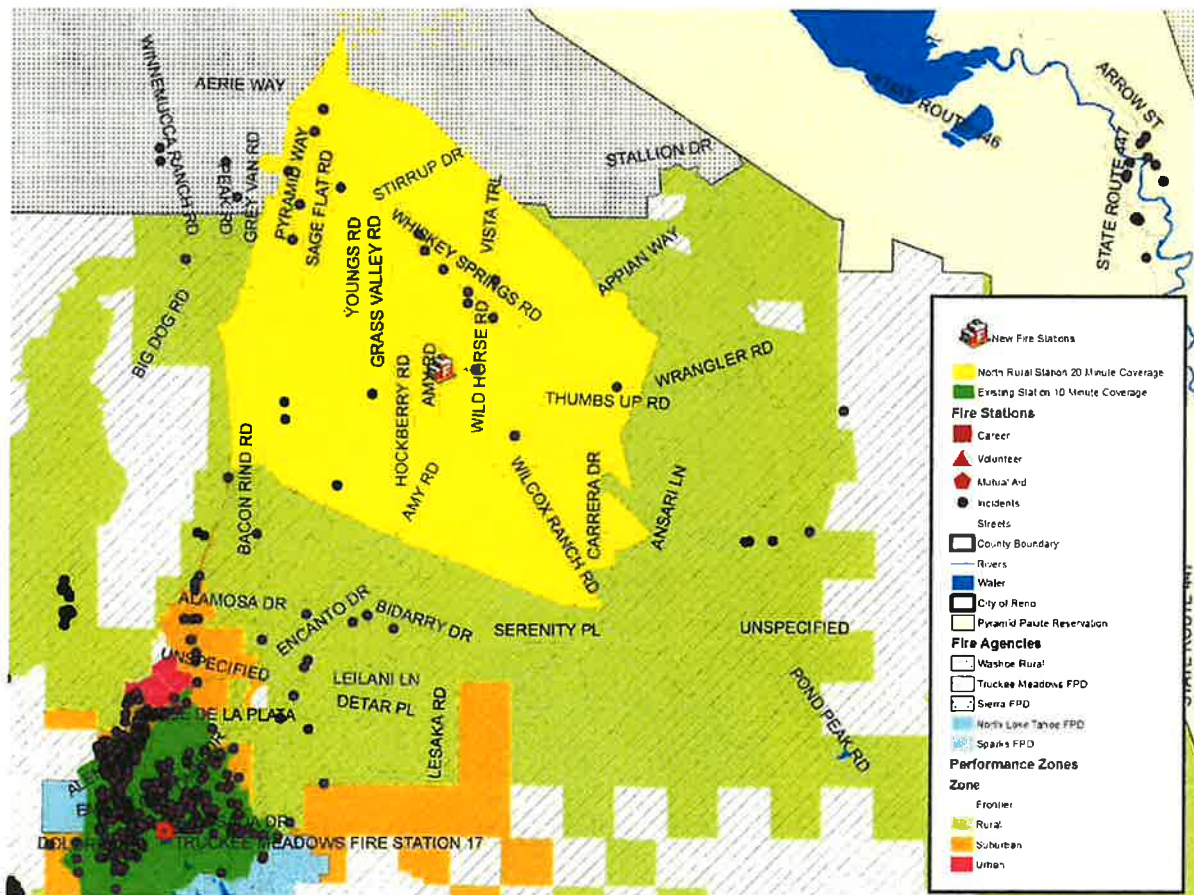
Figure 28: North End Fire Stations



There is a significant area of Rural Zone land north of Reno but south of the Township 22 line that is very underserved. Also within this area is a small area of Suburban Zone land.

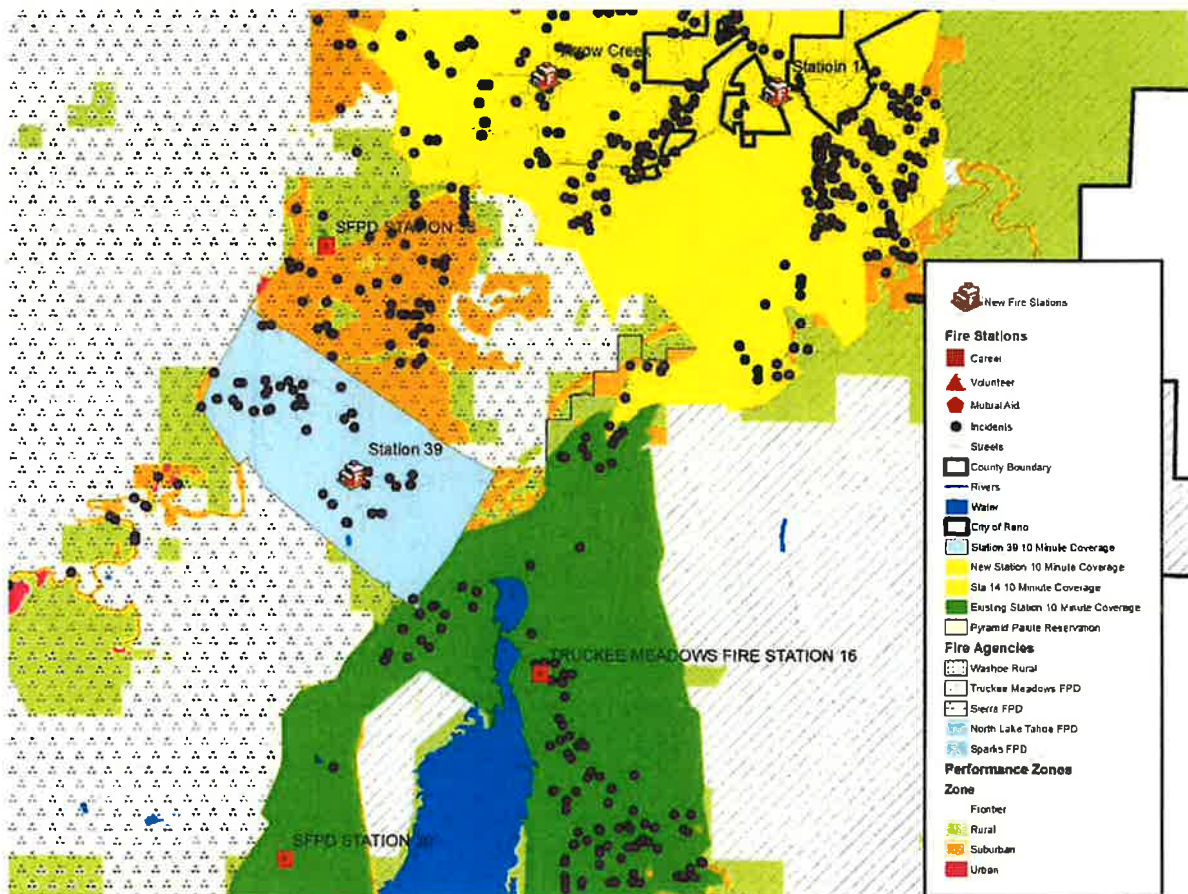
The following map shows the recommended location for this station (Sharrock Road and Amy Road). Response coverage is shown at the Rural Zone 20-minute standard. This area has a very low level of incident activity; however, response times to the area are currently very long.

Figure 29: North Rural Fire Station Location



There has been some conversation about moving response personnel from Fire Station 38 to Fire Station 39. Current and proposed coverage does leave some service delivery gaps in the Station 39 neighborhood. However, relocating response personnel to Station 39 from Station 38 would create even more gaps in coverage. The speed limit and geometry of the road network in the Station 39 area do not lend to fast response times. The following map illustrates the result of this move.

Figure 30: Coverage with Response Personnel Moved from Station 38 to Station 39

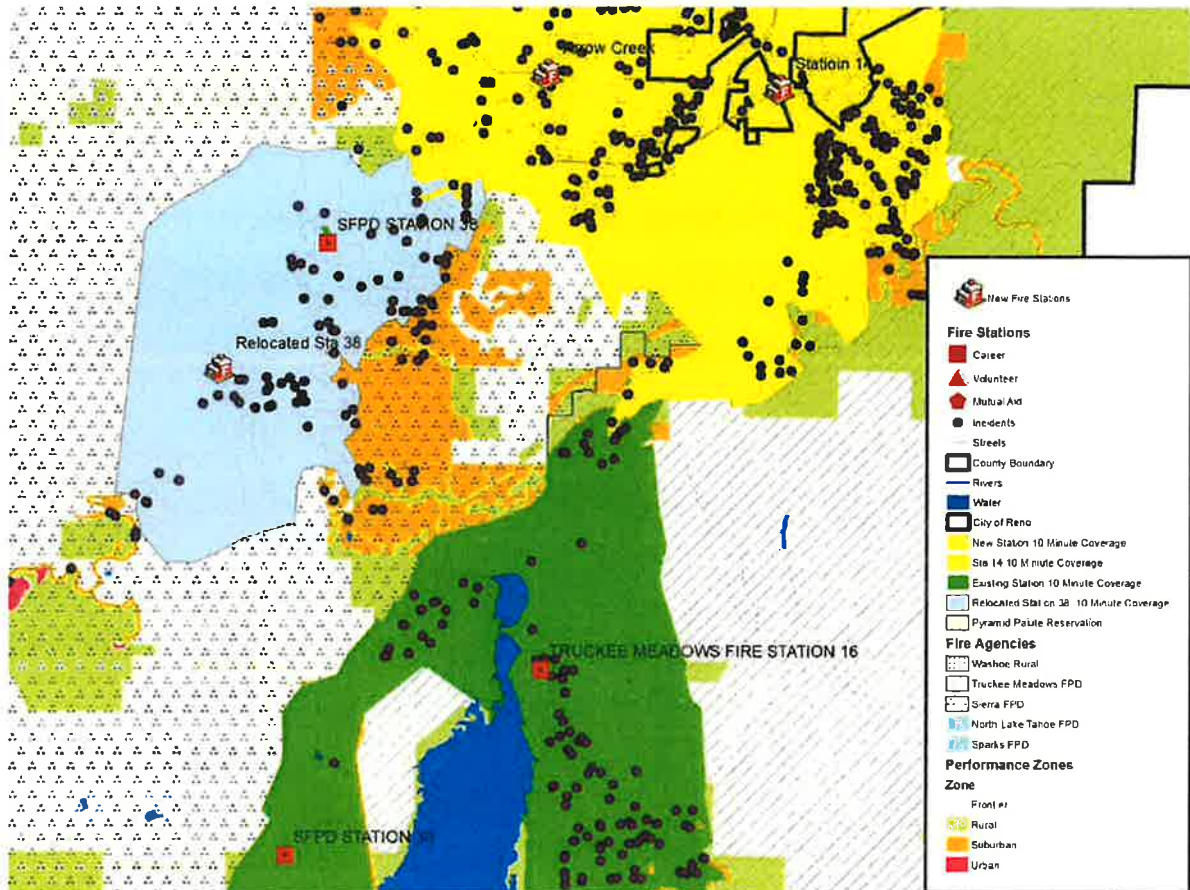


Station 39's coverage area at the ten-minute response time serves relatively little area compared to other station sites. This relocation also decreases service to Suburban Zone lands adjacent to Station 38.

A better option, though more expensive, would be to move Station 38 to a location at or near the intersection of Mt. Rose Highway and Joy Lake Road. The following map illustrates that

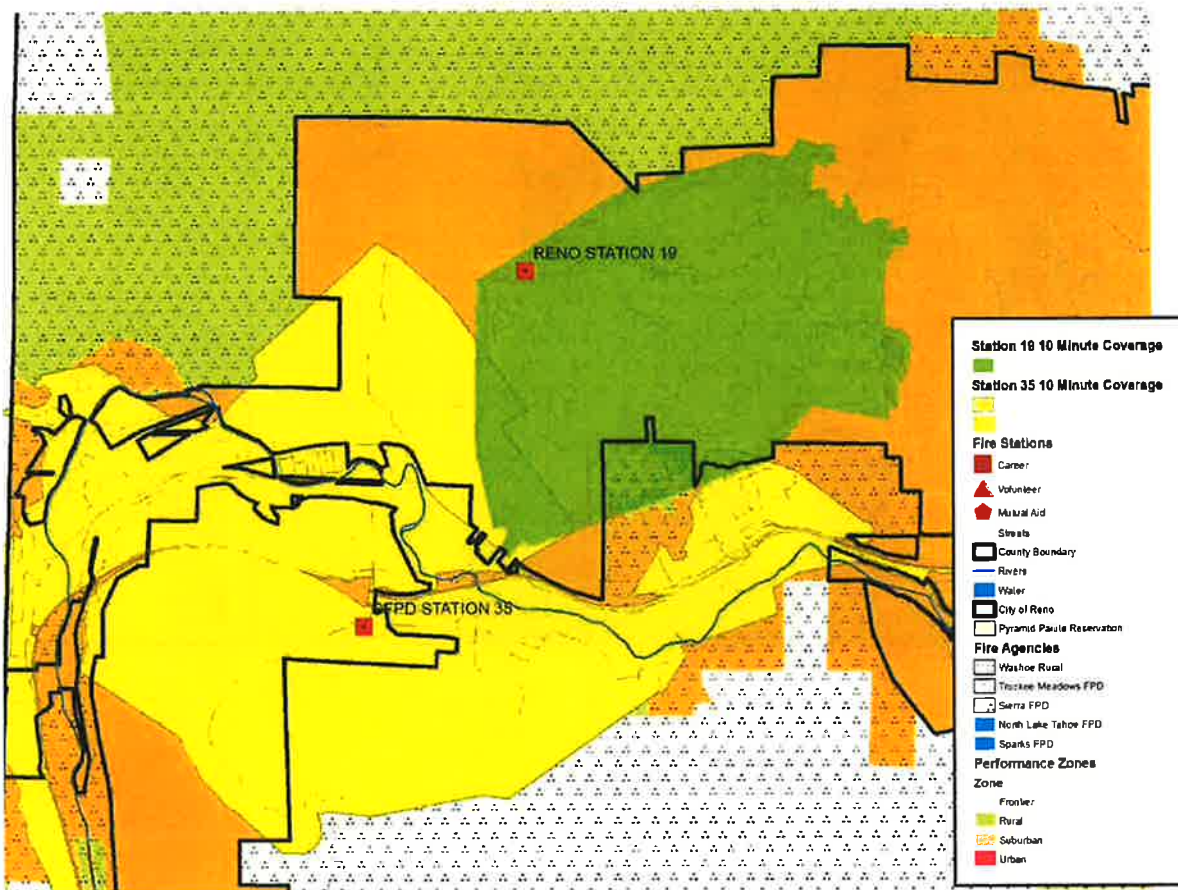
coverage from this location not only maintains existing coverage along Mt. Rose Highway but better serves area south and southeast along Joy Lake Road.

Figure 31: Relocated Station 38



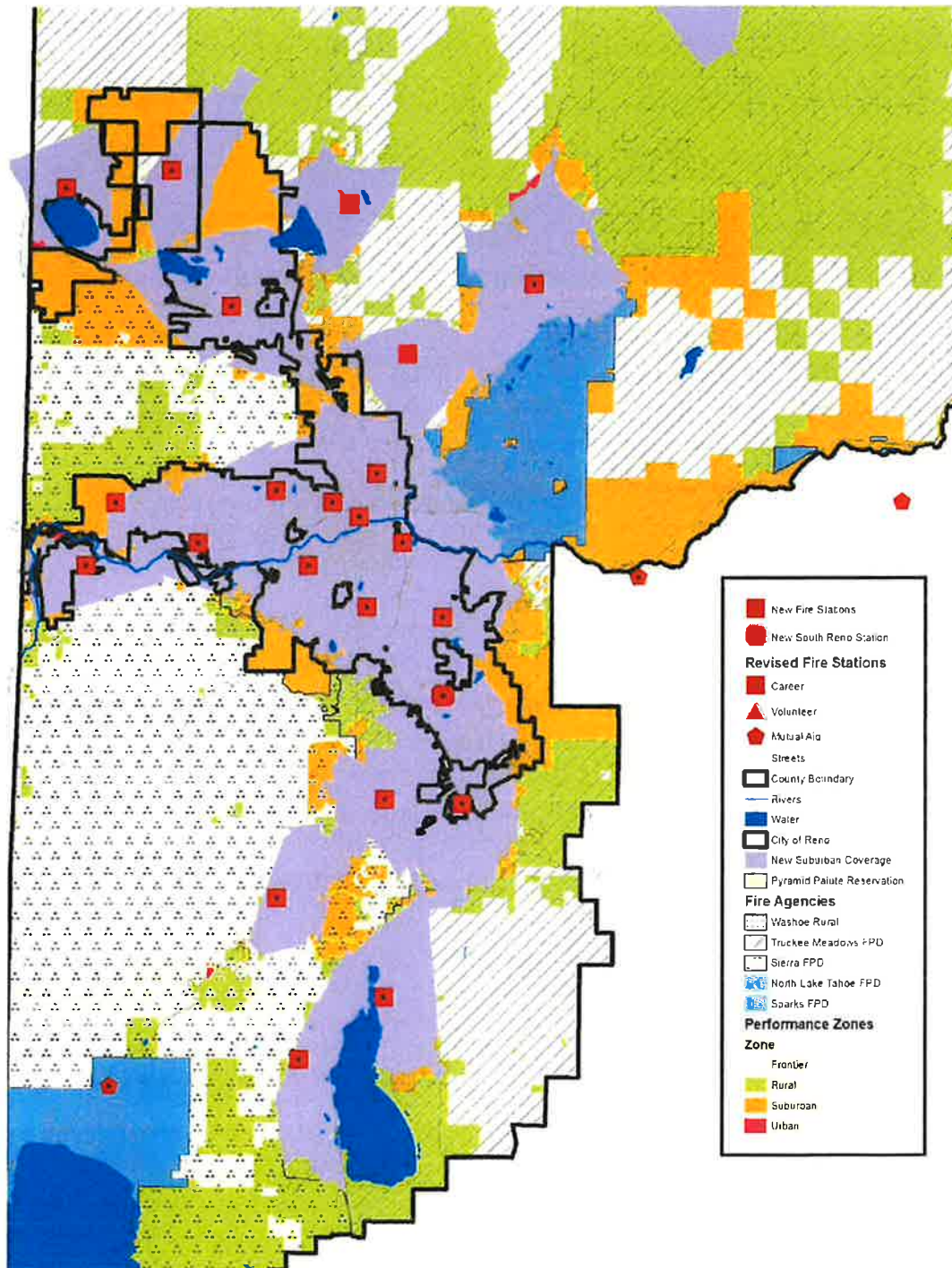
There has also been some consideration of consolidating Sierra Fire Station 35 with Reno Station 19. This is not recommended. The inability of Station 19 to quickly cross the Interstate 80 to the south negates its value to serve the Station 35 area. In addition, travel distances, even with easy access would exceed current travel time targets. Northbound access is much easier for Station 35, but its location leaves much of the Station 19 area outside the 10 minute response time target. The following map illustrates 10 minute response coverage from each station.

Figure 32: Fire Station 19 and 35 Response Coverage



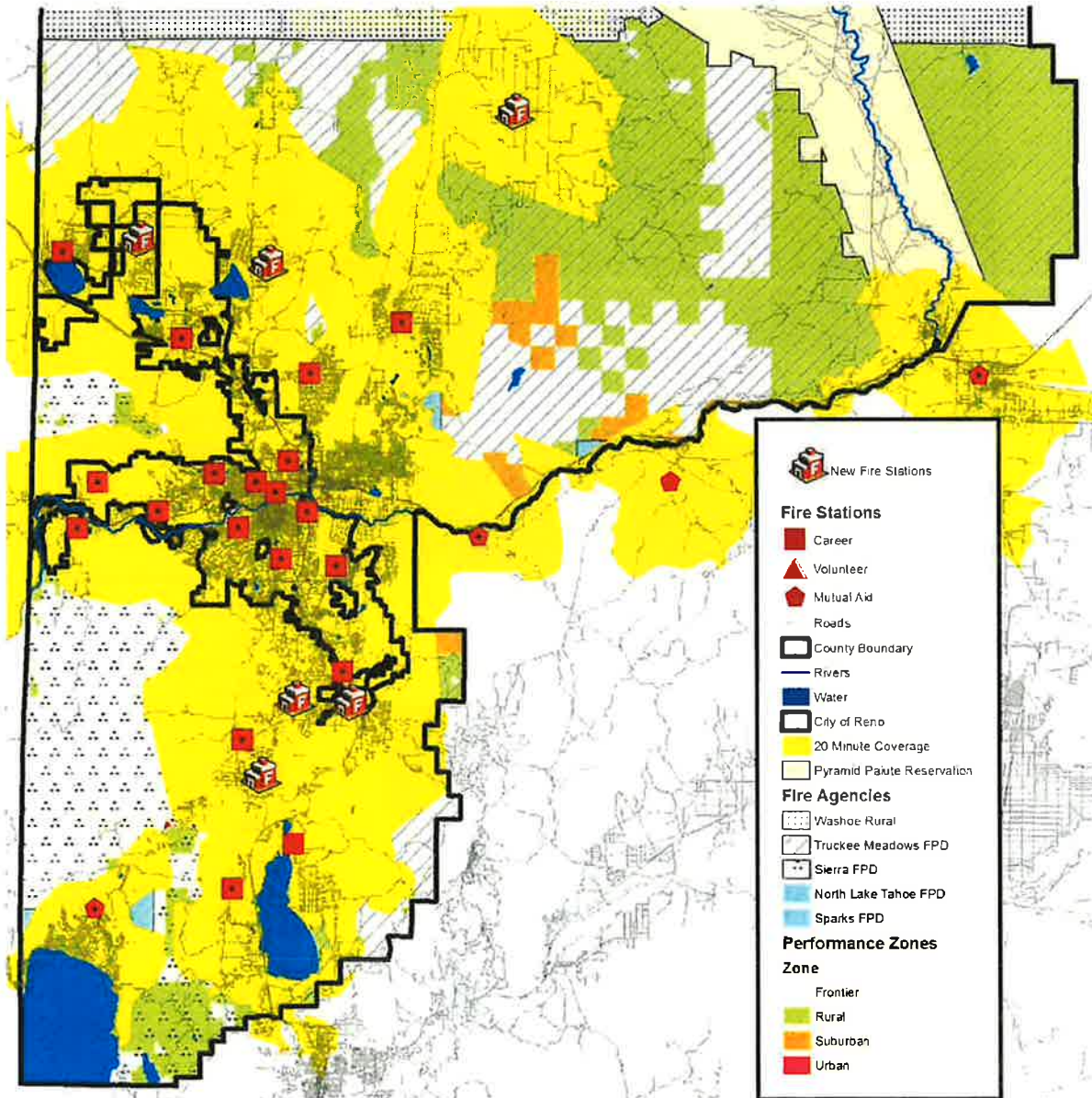
The proposed fire station additions and relocations greatly improve service to Suburban zone lands. The following map shows areas served at the 10 minute response time level.

Figure 33: South County Suburban Service Level Coverage



With these additional fire stations, the Rural Zone lands are more than adequately served at the 20-minute response time level. The following map shows coverage with the new stations included.

Figure 34: South County Rural Service Level Coverage

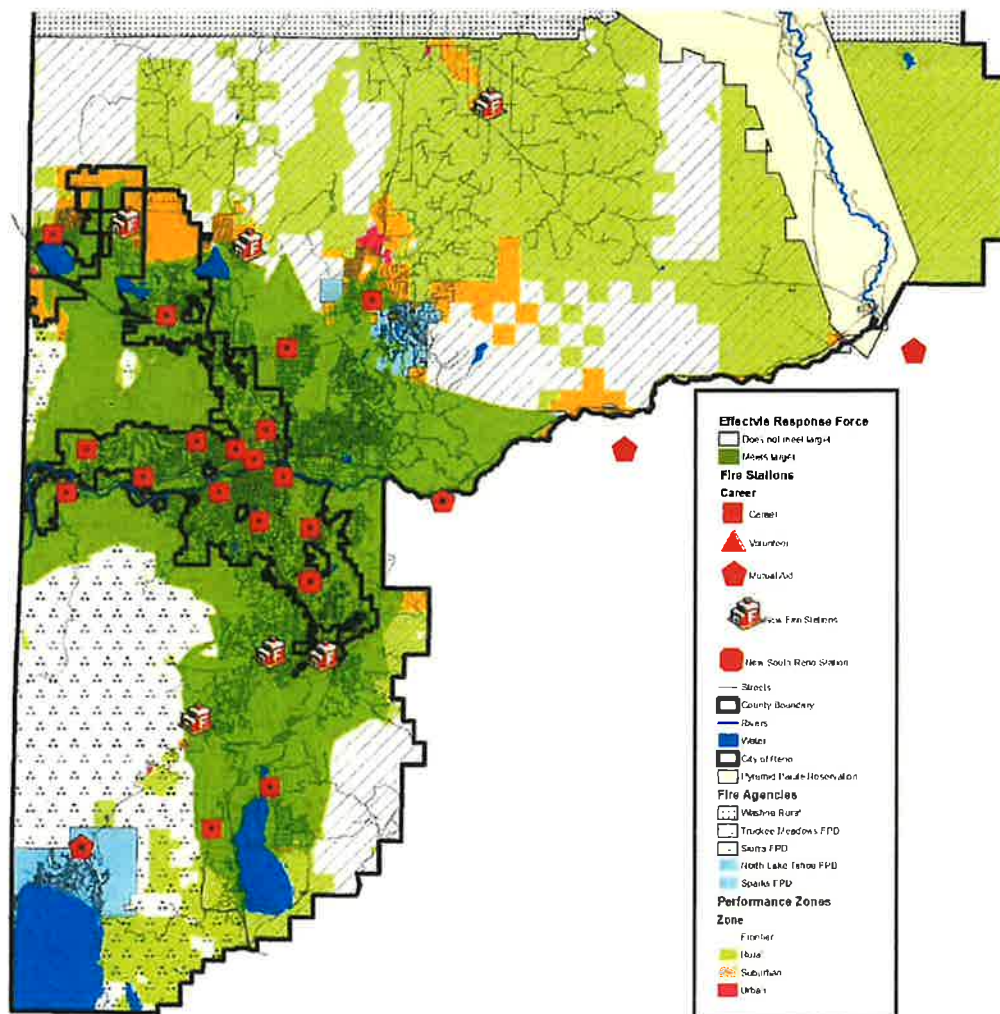


Although the area south of the Township 22 line is well served by these changes, the Gerlach and Red Rock areas remain unique challenges. Red Rock Fire Department serves only Rural Zone land and provides response coverage at the 20-minute response time objective. Gerlach serves both Suburban Zone and Rural Zone lands. Gerlach does not provide response time

coverage in its Suburban Zone areas in accordance with the ten-minute objective. Other alternatives for these areas are offered in the next section (Recommendations).

Finally, the addition of these recommended fire stations greatly increases the area that can be provided the full effective response force. Most underserved Suburban Zone lands, with the exception of the area in and around the area north of Reno, will be able to achieve the full effective response force within the 20-minute objective. The following map illustrates the improvement.

Figure 35: Effective Response Force with New and Relocated Stations



The cost to implement the recommended new stations is not insignificant and will clearly be dependent on the various jurisdictions ability to fund these improvements. The following table illustrates approximate costs to construct and equip the stations and the annual operating costs.

Figure 36: Acquisition and Operating Cost Estimate for Each New Station

Item	One-time Costs	Annual Costs
Fire Station and furnishings	\$3,000,000	\$100,000
Land	\$500,000	\$0
Apparatus and equipment	\$800,000	\$10,000
Staffing (4 per shift)	\$24,000	\$1,650,000
TOTAL	\$4,324,000	\$1,760,000

The total one-time and annual cost to implement the five new stations (including the south Reno station recommended in the City of Reno SOC) and two station relocations are as follows:

- One-time costs: \$28,620,000
- Annual operating costs: \$ 8,800,000

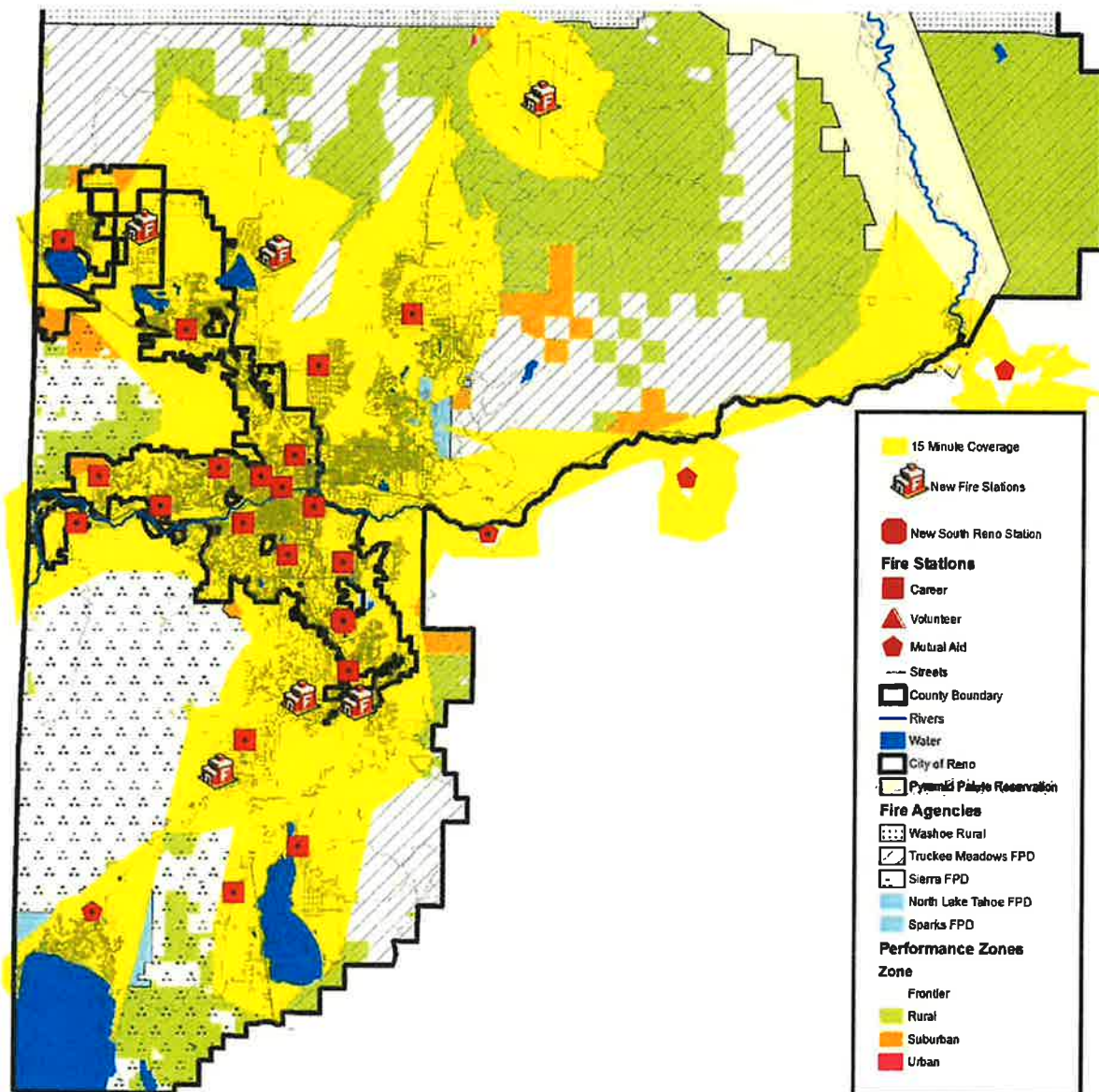
Service Tier Two Deployment Recommendations

Service Tier Two seeks to improve first-due response time (received to arrival) in the Urban Zone from within 8 minutes to within 6 minutes, 85 percent of the time. It also seeks to improve first-due response time in the Suburban Zone from within 10 minutes to within 8 minutes, 85 percent of the time. Finally, it seeks to improve first-due response time in the Rural Zone service from within 20 minutes to within 15 minutes, 85 percent of the time.

The first two recommendations in the following section of this report (Recommendations) will accomplish the response time improvements in the Urban and Suburban zones. No further deployment of fire stations or response companies should be needed.

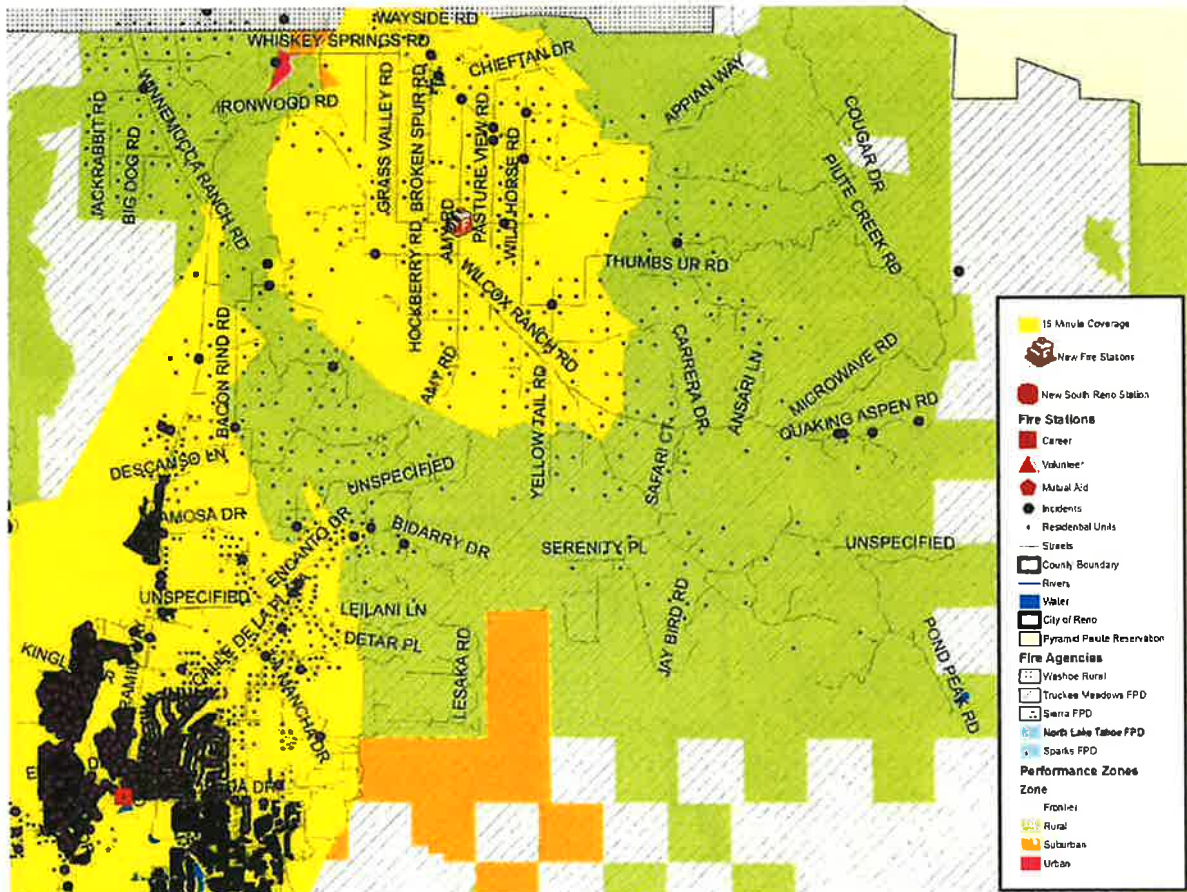
With the addition of fire stations needed to accomplish the Service Tier One ten-minute Suburban Zone objective, Rural Zone coverage improves to the Service Tier Two 15-minute objective. Only one area remains deficient at this performance level. The following map shows 15-minute Rural Zone coverage for the south county area.

Figure 37: 15-Minute Response Time Coverage



The area not served at the 15-minute response time level is shown in the following map. For reference, incidents occurring during the study period and points representing dwelling locations are included.

Figure 38: Underserved Rural Zone



A new station in the Wilcox Ranch Road and Carrera Drive area would provide additional coverage to this rural area, but would have almost no response activity.

Recommendations

The previous section (Deployment Needed to Achieve Service Tiers) described in detail new or relocated fire stations and response companies needed to improve overall service delivery to the region. This section describes additional recommendations that will further improve the delivery of fire and emergency services to the communities.

Dispatch Center Call Processing Time

As noted earlier in this report, the time taken at the dispatch center (ECOMM) to answer the call, gather needed information, and inform response personnel of the emergency type and location currently takes 2 minutes 1 second, 85 percent of the time, in the City of Reno and 2 minutes 6 seconds, 85 percent of the time, in the rest of Washoe County. This exceeds the time expressed in National Fire Protection Association *Standard 1221* by more than a minute.

ECOMM should take steps to improve its performance. ESCI has noted call processing times as short as within 34 seconds, 85 percent of the time, in another community. Improving call processing time by even one minute will improve overall response time by the same amount. Suburban Zone times, assuming implementation of the previous station location recommendations, should improve from within ten minutes to within nine minutes, 85 percent of the time.

Shortening call processing time may require improvements to dispatch center operations and resources, including:

- Modification or replacement of current computer aided dispatch systems
- Additional staffing
- Implementation of response company pre-alerting procedures

Response Company Turnout Time

Also noted earlier in this report, response company turnout time is currently within two minutes 25 seconds 85 percent of the time. The National Fire Protection Association Standard 1710 turnout time objective for structure fires is within 80 seconds 90 percent of the time and within 60 seconds 90 percent of the time for all other types of responses. Though these are highly aggressive performance levels, they suggest that improvement from current performance should be accomplished.

A one-minute improvement improves overall response time by the same amount. Suburban Zone times, assuming implementation of the previous station location recommendations, call processing time improvement and turnout time improvements of one minute should improve response time from within ten minutes to within eight minutes, 85 percent of the time.

Shortening turnout time may require some system improvements such as:

- Mobile data computers with automated response routing
- Response personnel training
- Fire station layout improvements
- Response personnel awareness and accountability

Gerlach and Red Rock Area Fire Suppression Capability

The Gerlach and Red Rock communities represent a unique emergency services challenge. Their remote locations, particularly for Gerlach, make providing the full effective response force (three fire engines and 13 firefighters) very expensive. The volunteer fire departments serving these communities do a good job responding to incidents requiring only a single unit, but delivering the full effective response force in time will always be a challenge. To do so would likely require placing career staffed response companies in each community.

An alternative is to utilize available technology to build fire suppression capability into each home. Residential fire sprinklers are an affordable option that provides a high degree of life safety to those exposed to a home fire and typically accomplishes fire control or extinguishment preserving property. Retrofitting a typical home with residential fire sprinklers can cost between \$3,000 and \$5,000. The estimated cost to retrofit homes in each community is as follows:

Figure 39: Estimated Cost to Retrofit Residence

Community	Number of Homes	Cost per Home	Total Cost
Red Rock	371	\$3,000	\$1,113,000
		\$5,000	\$1,855,000
Gerlach	102	\$3,000	\$306,000
		\$5,000	\$510,000

For a one-time investment of between \$1.4 million and \$2.3 million, residents of these communities are provided a very improved level of home fire protection without the need for additional fire stations and response companies.

Volunteer Fire Departments

The volunteer fire service represents roughly 80 percent of this nation's fire service capability. Many communities rely exclusively on volunteer response personnel for their fire and emergency services. Volunteer fire services have a long tradition of valuable service.

Those communities that depend exclusively on volunteer personnel demand a high degree of reliability. Most achieve it. The system in Washoe County, however, is not providing consistent response reliability as evidenced by both the analysis completed by ESCI and the recently released audit of the Sierra Fire Protection District. It was for this reason that volunteer companies were not included in the assessment of available response capability in this report.

Efforts should be undertaken to improve the reliability and capability of volunteer response personnel. This will be a significant undertaking, but in the end a capable and reliable volunteer response force will add measurable benefit to the community's fire and life safety. Several initiatives are recommended for consideration. These include:

- Improve systems for reporting participation, performance, and other activities. No meaningful system exists to document the activities of volunteer personnel in a manner that allows a true understanding of the contribution made by volunteer personnel.
- Establish minimum participation standards, including response reliability, training attendance, and medical screening. Volunteers not meeting standards should be provided opportunities to improve or be dropped from the program.
- Assimilate volunteer firefighters into each of the fire districts (Sierra and Truckee Meadows). The current structure of independent organizations under contract to the agencies can lead to confusion about chain of command, accountability, and performance reporting.